

NASA CUSTOMER SURVEY DRAFT REPORT

**Prepared by
Science Applications International Corporation (SAIC)
Arlington, Virginia**

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Foreword

The National Aeronautics and Space Administration (NASA) Office of Aeronautics and Space Transportation Technology (OASTT) conducted a customer survey of its primary, traditional technology customers between January and July 1998. It is the third such survey performed since 1992. The first survey was completed in 1992 and the second in 1995. The 1998 effort focused on NASA's Aeronautics and Space Transportation Technology (ASTT) Program with an emphasis on that program's Three Pillars for Success. The complete results from that effort are presented here.

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1. Introduction and Orientation

1.1 Objective of Customer Survey

NASA conducts periodic surveys of its customers in order to assess how well they have communicated their intentions and capabilities to their customers, and to ascertain how well their customers feel they have been served. Two previous surveys were performed, one in 1992 and one in 1995.

The objective of the 1998 NASA Customer Survey was to gather direct assessments of the state of NASA's Aeronautics and Space Transportation Technology (ASTT) Program from their principal customers and to provide an additional mechanism for obtaining customer input to future NASA program planning. This information allows NASA to gain a better understanding of the needs of the aeronautics community, increase the effectiveness of current NASA programs and thereby devise better ways to improve its performance.

1. Introduction and Orientation

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1.2 Survey Population and Respondents

The 1998 NASA Customer Survey interviewed 101 Executives and 72 Mid-Level Managers from the aeronautics community. Names of perspective companies and participants were provided by NASA and from previous survey participants. Executives surveyed were asked to suggest Mid-Level Managers to be surveyed. In turn, Mid-Level Managers were asked to provide additional survey candidates.

Direct and Indirect Industry then further defined the customer base. Direct Industry consists of those companies directly involved with NASA (e.g., aircraft manufacturers) and includes the DOD, FAA and other government agencies. Indirect Industry consists of those such as suppliers, air carriers, associations, key universities, and advocacy groups. The complete list of categories surveyed is shown below:

DIRECT INDUSTRY

- Large Civil Transport Manufacturers
- High Performance Aircraft Manufacturers
- Aircraft Engine Manufacturers
- Rotorcraft Manufacturers
- GA/Commercial/Sport/Business/Other Aircraft Manufacturers
- Launch Vehicle Manufacturers
- Launch Vehicle Engine/Propellant Manufacturers
- Aircraft Instrument/Avionics Manufacturers
- Specialized Aerospace Services
- Department of Defense Entities
- Other Federal Agencies

INDIRECT INDUSTRY

- Aviation Metal/Metal Component Manufacturers
- Non-Metallic Aviation Materials Manufacturers
- Air Carriers
- Satellite Manufacturers and Other Launch Service Customers
- Universities (Major ASTT Grantees)
- Aviation Associations
- Aerospace Analysts and Advocacy Groups

The categories also incorporate NASA's Aviation Advisory Committee (AAC) Members and Benchmark Companies. Benchmark Companies are those who are considered market leaders in their respective aviation industry segment and which are, or should be, significant users of NASA aeronautical technology. A complete list of organizations is shown in Appendix A. A summary of Survey Population Data is shown in the table below:

Survey Population Data	Executive	Mid-Level Manager
Survey Population	101	72
Population by NASA Survey Categories		
Direct Industry	63	65
Indirect Industry	38	7
Benchmark Companies	50	59
Aviation Advisory Committee Members	11	N/A
Universities	18	3
Aviation Associations	8	3

1. Introduction and Orientation

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1.3 Approach

The NASA 1998 Customer Survey interviews were conducted from January to July 1998. The survey was performed on a non-attribution basis to encourage candid response. An attempt was made to perform all of the Executive surveys by personal interview and the vast majority were so conducted. Telephone interviews were conducted for the few Executives who wished to participate, but were unavailable at the time the interviewer was at their particular location. A few Mid-Level Managers were interviewed at the time of the Executive survey, however, due to logistic difficulties, the majority of Mid-Level Managers were surveyed by telephone. The survey was designed to be conducted in less than one hour to encourage the participation of busy Executives. Interviewers were asked to assess the participant by level of interest and understanding. (Participants were asked the same questions, the results of which are shown in section 1.6.) Interviewees were asked which mission their answers would apply: aeronautics, space, or both. The following table shows a summary of these factors:

Survey Approach Summary	Executive	Mid-Level Manager
Method of Interview		
Personal Visit	86	14
Telephone	15	58
Average Interview Duration (Minutes)	56	41
Level of Understanding (Interviewer Assessment)	7.7	7.9
Level of Interest (Interviewer Assessment)	8.2	7.2
ASTT Mission Area to Which Answers Apply		
Aeronautics	63	47
Space	14	15
Aeronautics and Space	24	10

1. Introduction and Orientation

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1.4 Organization of Report

The survey questions were organized by general areas of interest further divided by specific topics relating to each general area. The organization is as follows:

- Introductory Questions
- ASTT Program Three Pillars and Ten Goals
- Level of Satisfaction with NASA's ASTT Program
 - Facilities and Services
 - Technology Transfer
 - Program Planning
- Level of Satisfaction with NASA
- Resource Management
- Contribution to National Needs
- Closing Questions – Executive Level Only

The survey was comprised of a mix of qualitative and quantitative questions structured into four types of questions: simple yes/no questions, questions where the participant was asked to rate their level of interest or satisfaction on a ten-point scale, questions where the participant selected those items that were of interest to them or were important to their company, and a number of qualitative questions that asked for a detailed, open-ended response. A complete copy of the survey form is shown in Appendix B.

1. Introduction and Orientation

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1.5 Results Presentation

1.5.1 Quantitative Results

Quantitative results are exhibited in graphs. In the quantitative questions, respondents were asked to rate their answers from 1 to 10. Responses from 1 to 4 are considered low, 5 to 7 medium, and 8 to 10 high. Results from the Executive surveys are shown by customer groups, AAC Member, and Benchmark Companies as relevant to the content of the question. A summary of the results of Mid-Level Manager surveys is shown in the last line of the graph. Extensive examples of follow-up qualitative responses to quantitative questions are provided in tables following the graph where applicable. The table below shows the mean of all quantitative responses by category.

Category	Mean	Rank
Aeronautics Advisory Committee	7.02	1
Universities	6.85	2
Government	6.69	3
Associations/Publications	6.58	4
Mid-Level Managers	6.55	5
Benchmark Companies	6.53	6
Direct Industry	6.50	7
Executives	6.41	8
Indirect Industry	6.36	9
Overall	6.47	

1.4.2 Qualitative Results

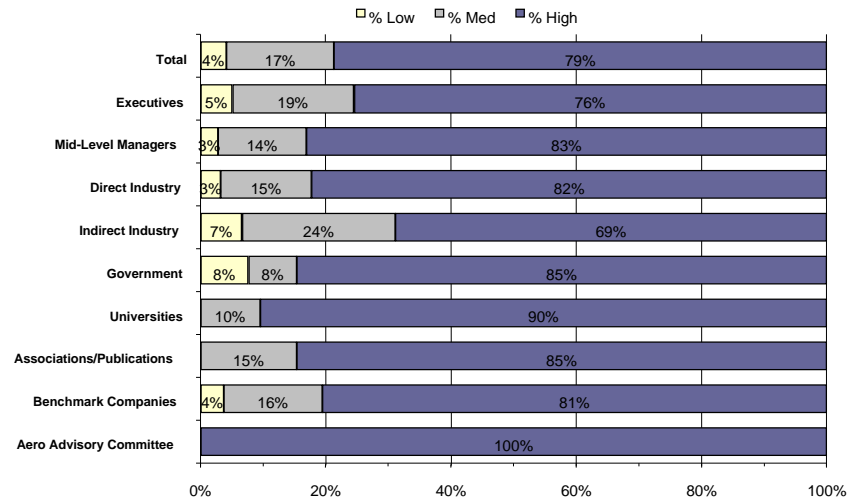
Responses to qualitative questions are provided in tables divided by Executives and Mid-Level Managers.

1. Introduction and Orientation

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1.6 Interviewee Profile – Interest and Understanding

1. What is your overall level of interest in the ASTT Program?



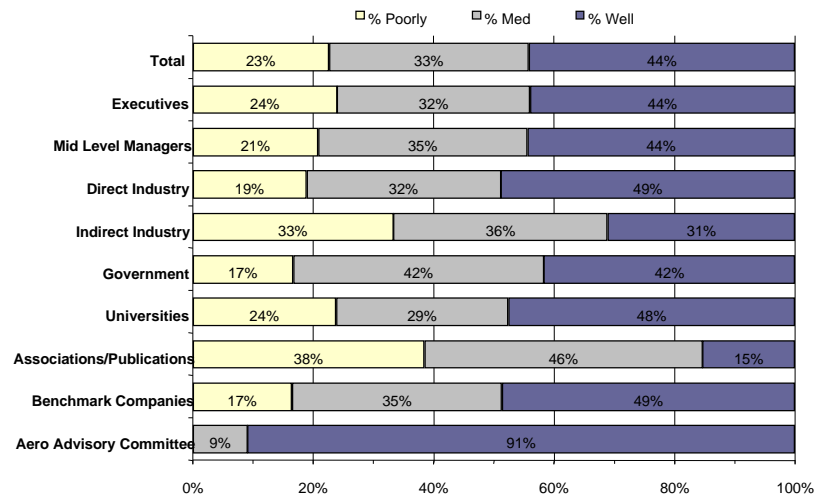
- 79 percent of the total respondents said they had a high level of interest in NASA's ASTT Program. This level was up from the 1995 survey where the total was only 75 percent.
- NASA's Aviation Advisory Committee (AAC) had the highest level of interest in the ASTT Program at 100 percent in the high category.
- University interest dropped from 100 percent in 1995 to 90 percent in 1998.
- The group that had the lowest level of interest in ASTT was Indirect Industry.

1. Introduction and Orientation

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1.6 Interviewee Profile – Interest and Understanding

2. How well do you understand the mission of the ASTT Program?



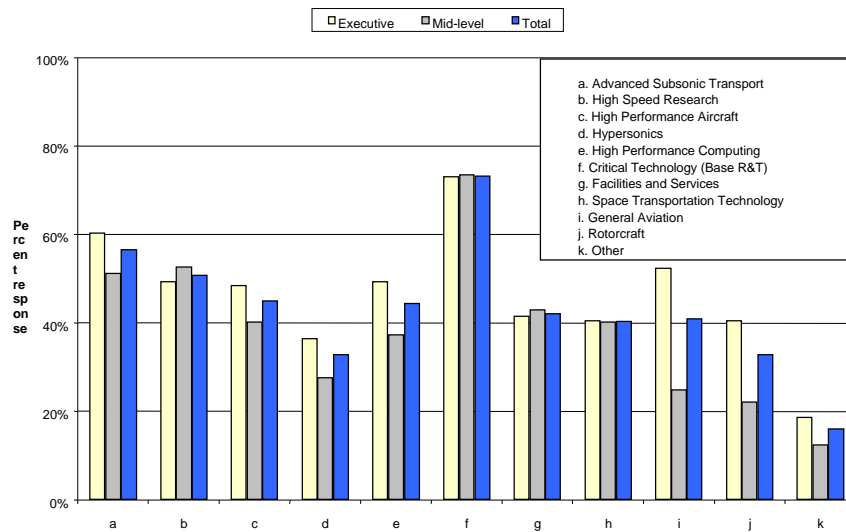
- The level of understanding of the ASTT Program from the entire group dropped from 55 percent in 1995 to 44 percent in 1998 in the “well” category.
- AAC Members had the highest level of understanding.
- The two groups with the lowest level of understanding were the Association/Publication and Indirect Industry.
- Mid-Level Managers felt they had a slightly better understanding of the ASTT Program than the Executives did.

The next section discusses organizational aspects and individual mission areas of NASA’s ASTT program.

2. Survey Responses – Program Assessment

2.1 Introductory Questions

1b. Select all the NASA mission areas that greatly interest you, select all that apply.



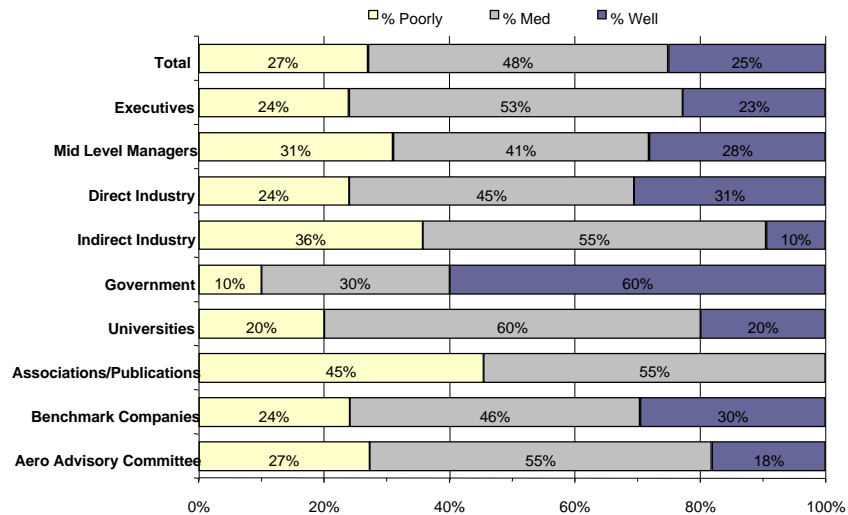
- Critical Technology (Base R&T) was selected as the area of greatest personal interest.
- Executives exhibited more interest in General Aviation and Rotorcraft than Mid-Level Managers.
- Other areas of general interest were Advanced Subsonic Transport, High-Speed Research, and High Performance Aircraft.

2. Survey Responses – Program Assessment

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2.1 Introductory Questions

3. How well are the current mission areas of NASA's ASTT Program aligned to your organization's needs?



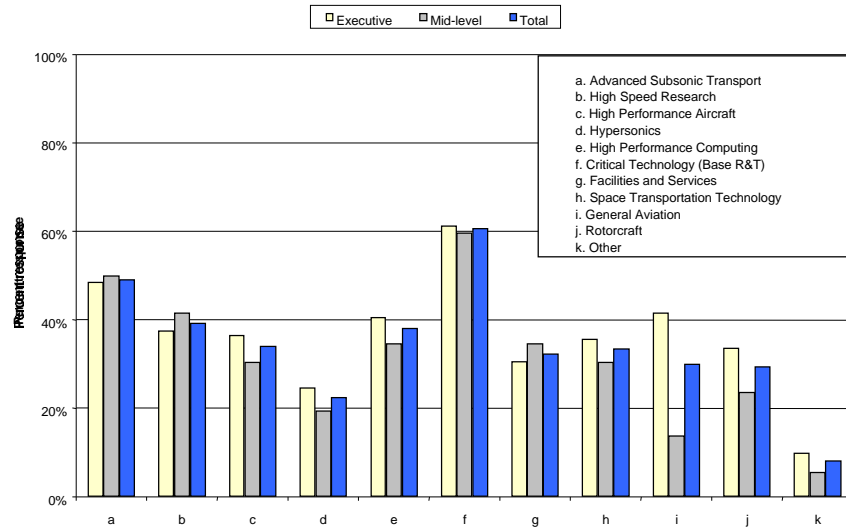
- Government rated NASA's ASTT Program mission areas best aligned to their needs.
- The Direct, Indirect and Benchmark Companies rated the mission areas next well aligned.
- Total scores were close to 1995's scores, only dropping one percent from 26 percent to 25 percent in well aligned, but the poorly aligned category grew from 23 percent to 27 percent.
- Associations/Publications rated the goals least with none ranking them well aligned.
- AAC Members ranked the mission areas at 18 percent, down from the 25 percent score of 1995.

2. Survey Responses – Program Assessment

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2.1 Introductory Questions

3b. What current mission areas of NASA's ASTT Program are most important to your organization?



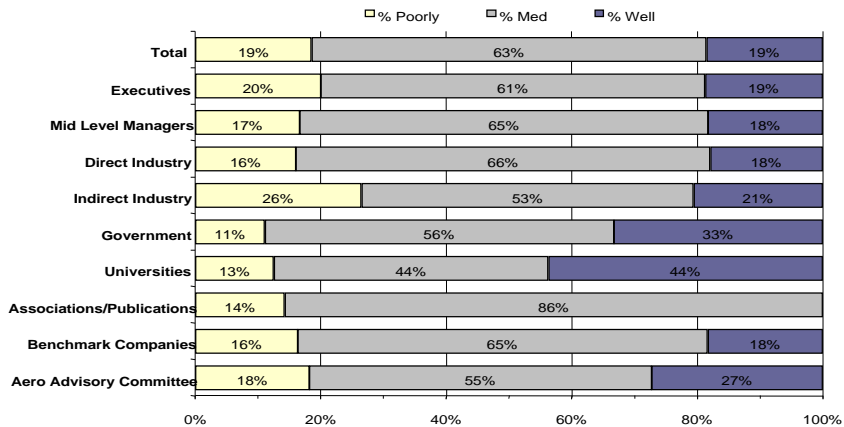
- Organizational interest closely paralleled individual interest.
- Critical Technology (Base R&T) showed the most interest.
- Executives showed much greater interest in General Aviation than Mid-Level Managers.
- Other areas of general interest were Advanced Subsonic Transport, High-speed Research, and High Performance Aircraft.

2. Survey Responses – Program Assessment

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2.1 Introductory Questions

4. How well is NASA's ASTT program accomplishing its mission?



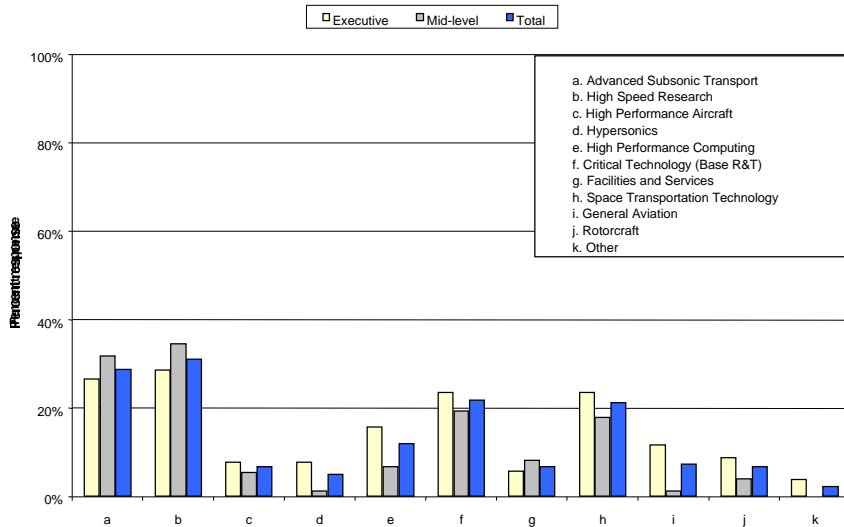
- More than half the total respondent group rated their general satisfaction in the middle range and most individual groups followed this pattern.
- Universities and Government gave highest ratings at 44 and 33 percent respectively.
- Associations/Publications gave no high rating but had the largest mid-range rating at 86 percent.

2. Survey Responses – Program Assessment

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2.1 Introductory Questions

4b. What current mission areas is NASA's ASTT Program accomplishing the best?



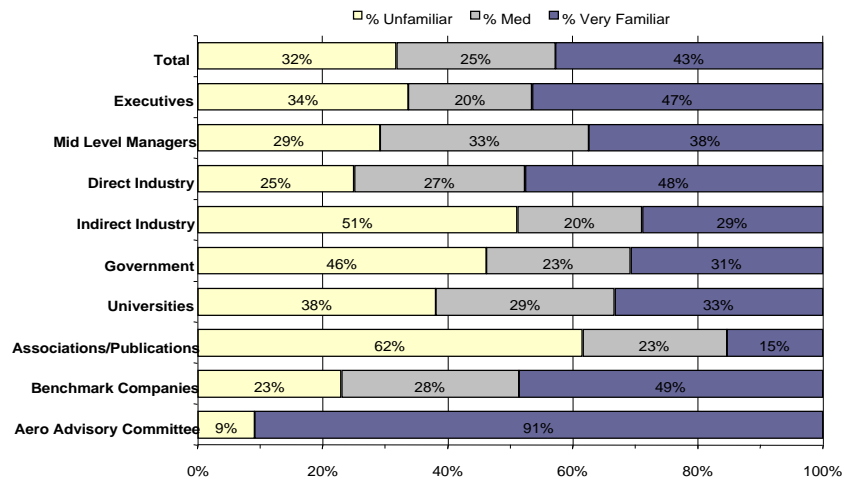
- Respondents typically only selected one or two items, unlike the previous selection questions where they picked several choices.
- Four mission areas were the most common selection; Advanced Subsonic Transport, High-Speed Research, Critical Technology (Base R&T), and Space Transportation Technology.
- Executives felt High Performance Aircraft, Hypersonics, Facilities and Services and Rotorcraft were accomplished least well. Mid-Level Managers selected these same areas as being performed least well, but included General Aviation.

2. Survey Responses – Program Assessment

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2.2 ASTT Program Three Pillars and Ten Goals

5. How familiar were you with the Pillars and Goals before this survey?



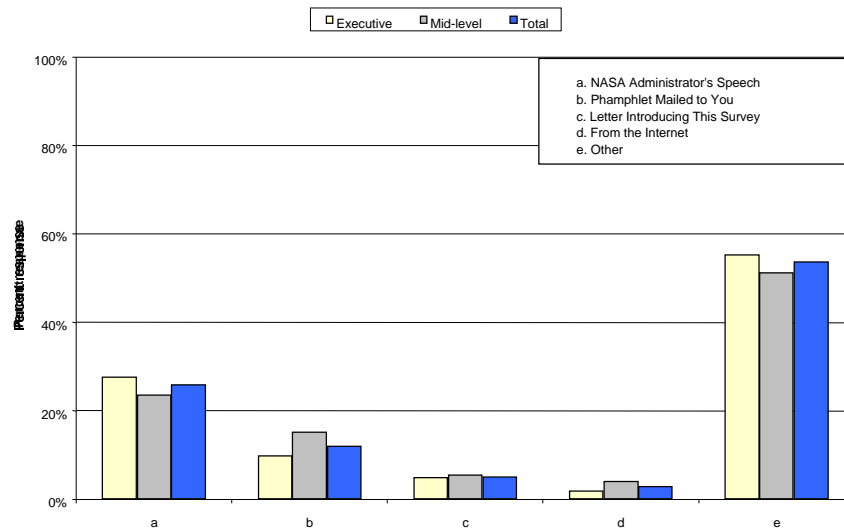
- Over two-thirds of the respondents were somewhat to very familiar with the Pillars and Goals before the survey.
- Those most familiar were the AAC Members followed by Benchmark Companies at 49 percent, Direct Industry at 48 percent, Executives at 47 percent, and Mid-Level Managers at 38 percent.
- The group least familiar was Associations/Publications with 62 percent being unfamiliar.

2. Survey Responses – Program Assessment

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2.2 ASTT Program Three Pillars and Ten Goals

5b. How did you learn about the Pillars and Goals?



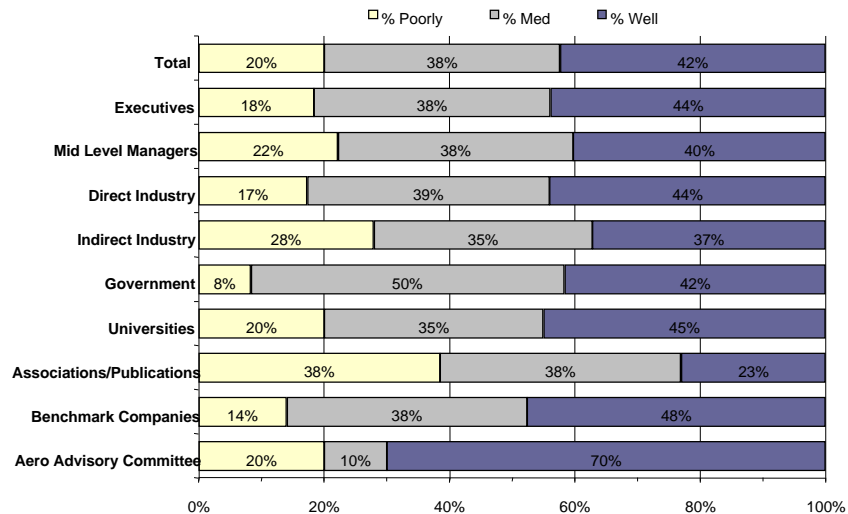
- Most respondents learned about the Pillars and Goals through interaction with NASA, either through working with NASA or from Committee work.
- The next most frequent way of learning about the Pillars and Goals was from the NASA Administrator's Speech.
- The least frequent way of learning about the Pillars and Goals was from the Internet.

2. Survey Responses – Program Assessment

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2.2 ASTT Program Three Pillars and Ten Goals

6. How well are the Goals aligned to your organization's needs?



Statements concerning:

✓ scores compared with other quantitative/qualitative question, e.g., "the scores are relatively high as compared to other quantitative ratings"

✓ additional comments comparison to previous survey(s) AAC/benchmark, etc., scores compared to general group

OR

✓ Statements concerning scores from Grouping 1 and/or 2

- Overall 42 percent ranked the Goals as well aligned to their organization. This score is much higher than a similar question from the 1995 survey where the total group rated "the current mission and roles of NASA's Aeronautics Program corresponding to organizational requirements" as 26 percent.
- No group ranked the Goals less than 37 percent well aligned except Associations/Publications where the Goals were ranked 23 percent.
- AAC Members and Benchmark Companies ranked the Goals the highest in being aligned to their organizations with 70 percent and 48 percent respectively. Except for those previously defined, the remaining groups ranked the Goals as being well aligned between 37 and 45 percent.

2. Survey Responses – Program Assessment

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2.2 ASTT Program Three Pillars and Ten Goals

6b. Which goals are best aligned to your organization's needs?

Many respondents identified specific Pillars or Goals; some respondents identified subsets of Pillars or Goals.

Total	Executive	Mid-Level	Responses
62	38	24	Safety
55	33	22	Reduced Cost of Air Travel
52	24	28	Next Generation Design Tools
34	14	20	Environmental Compatibility
34	25	9	General Aviation Revitalization
28	11	17	High Speed Research/Travel
23	14	9	Access to Space
23	20	3	Global Civil Aviation
22	13	9	Revolutionary Technology Leaps
19	9	10	Revolutionize Space Launch Capability
14	5	9	Reduce Noise
12	7	5	Experimental Aircraft
9	3	6	Reduce Emissions
7	5	2	Reduce Payload Cost to Orbit
3	3	0	Research and Technology Base
3	3	0	Affordability
2	2	0	All Goals Are Aligned
Numerous Answers with a Single Response			

2. Survey Responses – Program Assessment

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2.2 ASTT Program Three Pillars and Ten Goals

6c. Which important goal, from your organization's perspective, is missing?

Many respondents were satisfied with the goals, but some had suggestions often specifically related to their own interests.

Executive Responses	Group
Work with DOD research programs where commonality applies. There needs to be a goal to share and integrate more cost-effective R&D work with DOD.	Direct Industry
Nothing at a top level, but certainly some elements are not addressed in the Goals. Trying to do too much with system integration (industry's job) not focusing on technology improvement.	
Fighter attack aircraft or other military products.	
Advanced propulsion for interplanetary exploration, at this level.	
Competitiveness of US engine manufacturers, reduce time and cost of developing new products, and cannot find how engine technology fits into Pillars.	
Greatly concerned about future of subsonic transport R&T. Basic is being neglected. Formed enterprises in NASA to mirror industry.	
Development of future rotorcraft concepts and configurations, working with FAA to develop infrastructure for future civil transportation.	
No materials research for airframe technology for general aviation.	
Aeronautics and earth sciences are not connected. NASA OASTT ignores internal customers.	
High performance military aircraft.	Indirect Industry
Next generation avionics.	
Review the harm to current industry in government investing in materials that industry already provides.	
FANS, satellite communication technology, composite wing, wet wing.	
Reduce cost to lower earth orbit applies to only part of mission. Need strict goals that cover launch to orbit mission, transfer orbits and on issues with space probe.	
Allow commercial industry to prevail in access to space infrastructure.	Universities
The goal of ensuring that we have the next generation to do this. Worried we don't have people power and tools to accomplish these goals. There are a lot of show-stoppers to allow this to happen	
Not appropriate for my organization.	
More long-term fundamental research.	Universities
Future engineering education should be in Goals, important to next generation.	

2. Survey Responses – Program Assessment

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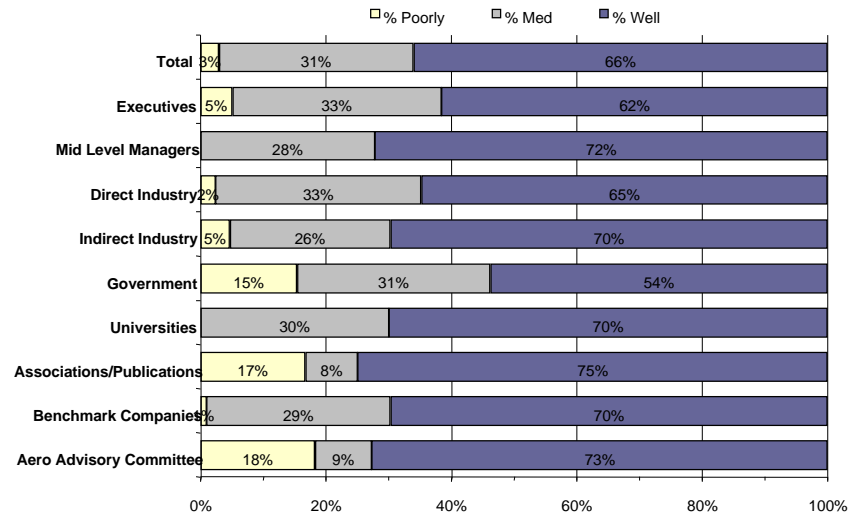
Up front requirements analysis with related operational research and can't benefit research.	
Economic viability of the contemplated technologies.	
Human factors research.	Associations
Free flight implementation. Application of technology.	
Mid-Level Manager Responses	
Rotorcraft.	
Emphasis not quite where we want.	
Interaction with academia and support of academia.	
Manned space and exploration of outer planets.	
No military.	
Next generation avionics.	
Moving too slowly on liquid rocket booster for shuttle.	
Product quality.	
General aerodynamic research, structure, materials, and aerodynamics.	
There isn't anything missing.	
Access to Space is tied up and involved too much in space. The space goals need to improve their performance.	
Basic research.	
Safety relating to takeoff and landing performance.	
Industry-driven space transportation segment. NASA does things it's way, not looking at alternatives. Listens to civil aviation but not space.	
Understanding life cycle cost, interaction between Goals and a balance.	
Focus on NASA/industry relationships to accomplish Goals listed.	
Resource commitment.	
Fundamental flow physics.	
Increasing participation of industry to achievement of Goals. Invigorate space industry.	
Infrastructure development.	

2. Survey Responses – Program Assessment

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2.2 ASTT Program Three Pillars and Ten Goals

7. How well are the Goals aligned to *national* needs?



- Total respondents overwhelmingly ranked NASA's Goals as being well aligned to national needs scoring it at 66 percent. Total "well" and "medium" rating was 97 percent.
- The lowest "aligned well" rating was Government at 54 percent, which also had the second highest "poorly aligned" rating of 15 percent.
- Mid-Level Managers and Universities gave no low rating to this question.
- Although 73 percent of the AAC Members rated NASA's Goals as "well" aligned, 18 percent rated the Goals as poorly aligned, the highest rate of "poorly" rating.

2. Survey Responses – Program Assessment

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2.2 ASTT Program Three Pillars and Ten Goals

7b. Which goals are best aligned to *national* needs?

Most respondents identified specific Pillars or Goals; some respondents identified subsets of Pillars or Goals. These results closely paralleled the results of Question 6b regarding the alignment to organizational needs.

Total	Executive	Mid-Level	Responses
71	37	34	Safety
70	36	34	Reduced Cost of Air Travel
43	23	20	Environmental Compatibility
34	16	18	High Speed Research/Travel
33	19	14	Global Civil Aviation
28	18	10	Revolutionize Space Launch Capability
25	15	10	Next Generation Design Tools
23	13	10	General Aviation Revitalization
21	14	7	Access to Space
15	10	5	Revolutionary Technology Leaps
14	7	7	Reduce Payload Cost to Orbit
8	8	0	All Goals Are Aligned
8	2	6	Reduce Emissions
7	5	2	Experimental Aircraft
6	1	5	Reduce Noise
3	3	0	Affordability
3	3	0	Increasing Aviation System Throughput/Capacity
2	2	0	Advanced Subsonic Transport
Numerous Answers with a Single Response			

2. Survey Responses – Program Assessment

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2.2 ASTT Program Three Pillars and Ten Goals

7c. What important Goal, from a *national* perspective, is missing?

Suggestions concerned keeping the United States competitive as a world leader in space and aviation whether through basic research or specific programs.

Executive Responses	Group
Cost reductions in technology in performing research and integration with DOD research.	Direct Industry
No goal beyond getting to orbit--need a long-range goal for space transportation.	
Advanced propulsion for interplanetary exploration, at this level.	
Development of future rotorcraft concepts and configurations. Working with FAA to develop infrastructure for future civil transportation.	
Low cost, efficient, reliable GA and rotorcraft engines.	
The goal that is missing is one that reflects the "birth to operation" cycle for everything in the overall program. Actually getting this in place at initial concept and carrying it throughout its lifetime.	
What is missing is providing the technology that is gained from these initiatives in the different technology areas. Also the application in other areas, such as manufacturing, computers, and any spin-off capabilities that could be used for the good of manufacturing, computers, and any spin-off capabilities that could be used for the good of mankind.	
High performance military aircraft.	
ATM system enables approaches for 2020.	
Composite material characterization standardization issues. This is a detailed technology that has a wide spread application.	Indirect Industry
Next generation of scientists and engineers mission. Basic research long-term perspective.	Universities
Developing second national airways system with short-haul VTOL, commercial aircraft and infrastructure.	Universities
More long-term fundamental research.	Universities
Again, the educational outreach programs that train people and introduce them to technology. Emphasis on the human dimension is missing. This is a very important step that needs to be there. NASA needs to focus more on the issue of people.	Universities
Human factors research.	Associations
Reducing payload costs industry wide, not just to a few contractors.	Associations
US competitiveness is not explicit.	

2. Survey Responses – Program Assessment

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Mid-Level Manager Responses

Support of academia.

There is not a specific man-space interface. It's implied but not really there. Implied that if we get costs down we can do it but not first order.

Affordable military aircraft.

US competitiveness.

Manned mission to Mars.

Goal that addresses cost of high performance aircraft.

General aerodynamic research areas.

Colonizing space.

Re-organizing the civil aviation effort and providing a better focus for this effort.

Making access to space "routine" and not a special and unique issue.

I don't think that anything is missing.

The issue of cost is missing. Addressing what it costs to do the work.

High performance engine materials for aerospace applications.

Commercialization of space. Lots of new little companies, but not with ASTT.

Economic affordability, some international thoughts, some goals demanding maybe international help.

Set realistic atmospheric and environmental requirements.

Significant improvement in training.

More efficient use of low altitude environment, expansion of frequencies (for communication) spectrum.

Revitalizing the test facilities.

Development of HEAVY lift capability to low earth orbit (LEO) for missions to Mars.

Core propulsion technology.

Hypersonic global technology (reduction of 80%).

Security.

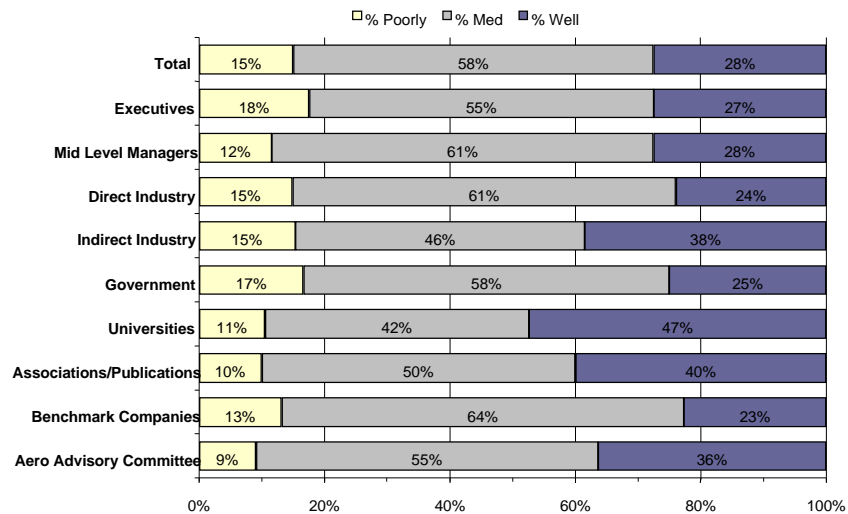
Develop, in detail an understanding of DOD and industry markets. Acting as equal risk-reduction agent versus system development to enhance international competition.

2. Survey Responses – Program Assessment

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2.2 ASTT Program Three Pillars and Ten Goals

8. Overall, how well are NASA's current programs aligned to the Goals?



- This question generated a large percentage of “medium” responses, with all groups rating it 58 percent medium, 28 percent high, and 15 percent low.
- The highest “medium” score was 64 percent from Benchmark Companies.
- Universities and Association/Publications exhibited the highest “aligned well” scores at 47 percent and 40 percent respectively.
- The highest “aligned poorly” scores were from Executives at 18 percent, followed by Government at 17 percent.

2. Survey Responses – Program Assessment

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2.2 ASTT Program Three Pillars and Ten Goals

8b. Which current ASTT programs are best aligned to the goals?

Most respondents provided answers that related to specific Pillars, Goals, or ASTT Programs.

Total	Executive	Mid-Level	Responses
49	19	30	High Speed Research/Travel
31	11	20	Advanced Subsonic Transport
31	16	15	Experimental Aircraft (X - 33, X - 34, X - 36, Hyper - X, Future - X)
24	14	10	Safety
14	11	3	Next Generation Design Tools
13	11	2	General Aviation Revitalization
12	12	0	Advanced General Aviation Transport Experiments
12	9	3	Global Civil Aviation
12	1	11	Revolutionize Space Launch Capability
11	6	5	Reduced Cost of Air Travel
10	10	0	Access to Space
9	7	2	Environmental Compatibility
8	8	0	Advanced Air Transportation Technology
8	5	3	Reusable Launch Vehicles
7	5	2	Rotorcraft/Tiltrotor
6	3	3	High Speed Civil Transport
5	5	0	General Aviation Propulsion/Propulsion Research
5	2	3	Revolutionary Technology Leaps
4	1	3	Reduce Noise
2	2	0	All Goals
2	2	0	Environmental Research Aircraft and Sensor Technology
2	2	0	Hypersonics
2	2	0	Increasing Aviation System Throughput/Capacity
2	2	0	Not Aligned
2	0	2	Research and Technology Base
Numerous Answers with a Single Response			

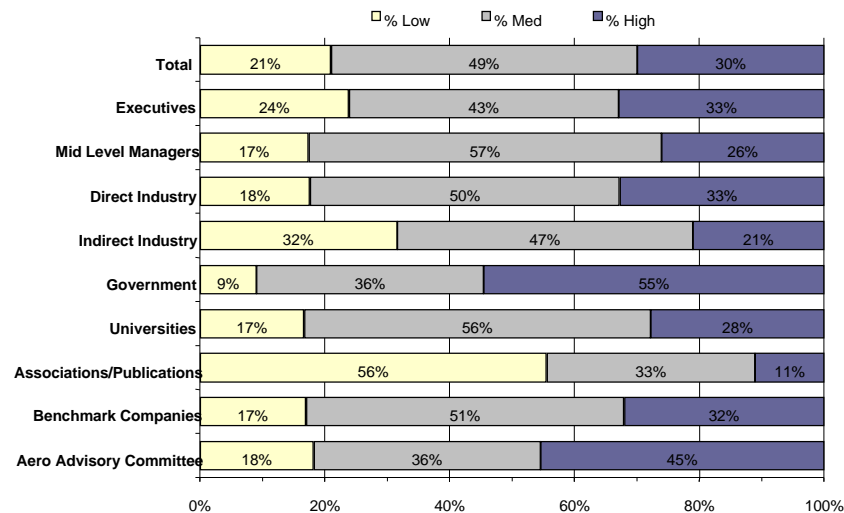
2. Survey Responses – Program Assessment

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2.3 Level of Satisfaction with NASA's ASTT Program

2.3.1 Facilities and Services

9. What is your level of satisfaction with NASA's ASTT Facilities and Services?



- 79 percent of all respondents rated their satisfaction with NASA's ASTT Program as "medium" (at 49 percent) or "high" (at 30 percent).
- This compares to a total "medium" and "high" rating of 88 percent to a similar question concerning overall satisfaction with NASA's Aeronautics Program in the 1995 survey. In 1995 the "high" score was 41 percent, and the "medium" score was 47 percent.
- Most satisfied with the Program was Government at 55 percent, with the next highest rating from AAC Members at 45 percent.
- Least satisfied were Associations/Publication which gave a 56 percent "low" rating, followed by Indirect Industry with a 32 percent "low" rating.

2. Survey Responses – Program Assessment

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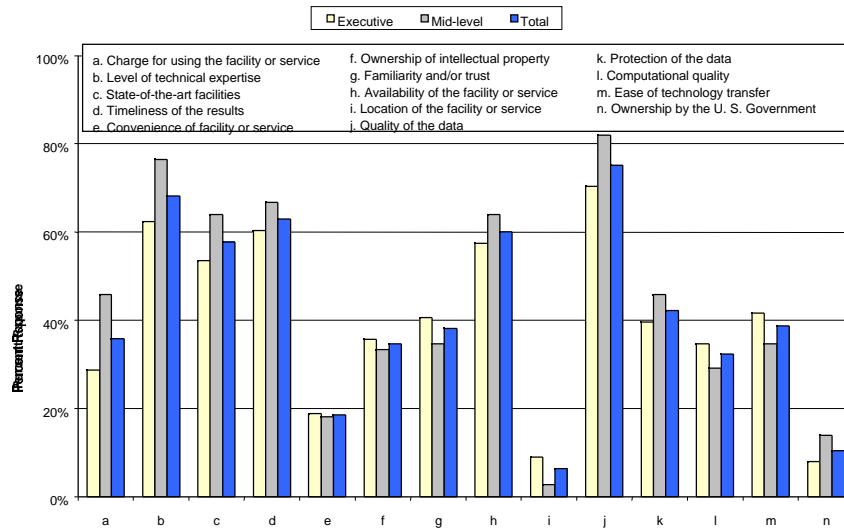
2.3 Level of satisfaction with NASA's ASTT Program

2.3.1 Facilities and Services

9b. Which NASA *facilities and services* that are of most importance, then of moderate importance, and finally those of lesser importance to your organization

Selections of “greatest”, “moderate importance”, and “least importance” are shown in separate graphs on the following pages.

Greatest Importance



- Executives and Mid-Level Managers generally had similar opinions on which facilities and services were important to their organization.
- The four most important facilities and services were Quality of the Data, Level of Technical Expertise, Timeliness of the Results, and State-of-the-Art Facilities.
- Those selected least were Location of the Facility or Service, Ownership by the U.S. Government, and Convenience of Facility or Service.

2. Survey Responses – Program Assessment

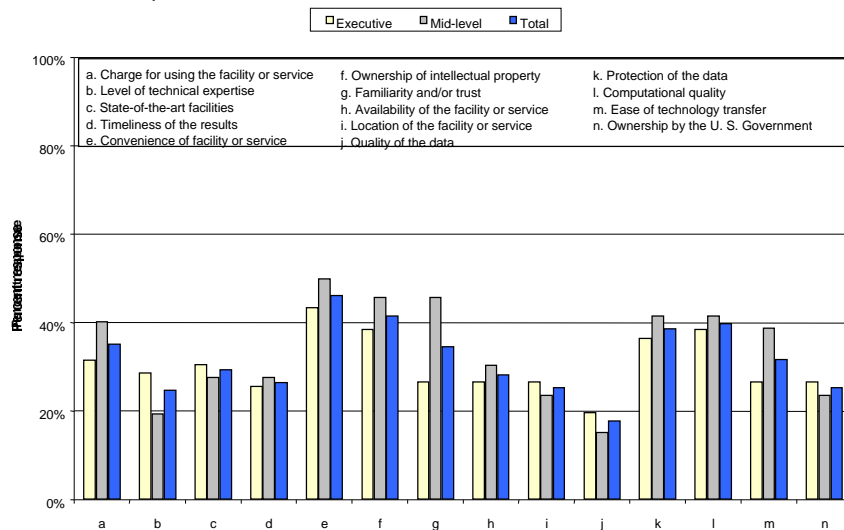
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2.3.1 Facilities and Services

9b. Which NASA *facilities and services* that are of most importance, then of moderate importance, and finally those of lesser importance to your organization.

Selections of “greatest”, “moderate importance”, and “least importance” are shown in separate graphs on the following pages.

Moderate Importance



- Executives and Mid-Level Managers generally had similar opinions on which facilities and services were moderately important to their organization.
- The three moderately important facilities and services were Convenience of Facility or Service, Ownership of Intellectual Property, and Familiarity and/or Trust. These were followed closely by Protection of Data, Computational Quality, Charge for Using the Facility or Service, and Ease of Technology Transfer.

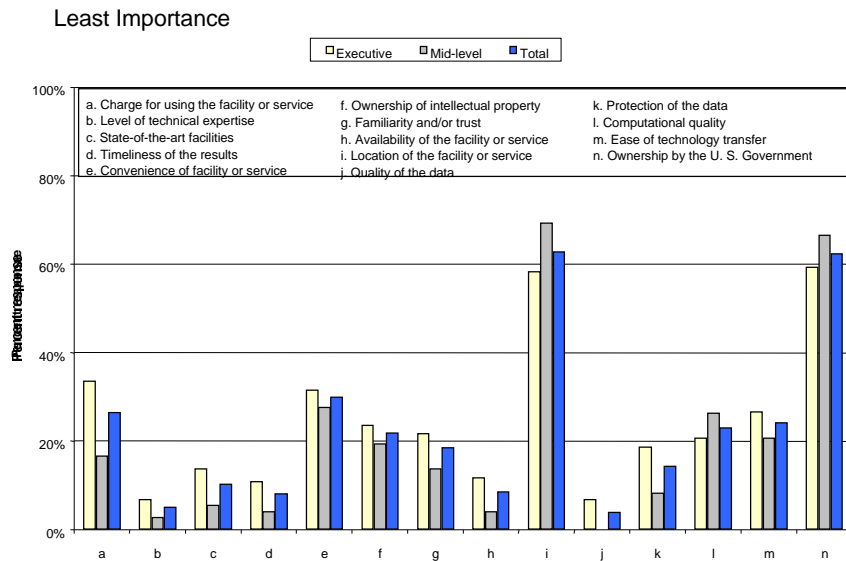
2. Survey Responses – Program Assessment

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2.3.1 Facilities and Services

9b. Which NASA *facilities and services* that are of most importance, then of moderate importance, and finally those of lesser importance to your organization.

Selections of “greatest”, “moderate importance”, and “least importance” are shown in separate graphs on the following pages.



- Executives and Mid-Level Managers generally had the similar opinions on which facilities and services were moderately important to their organization.
- The two least important facilities and services were Location of the Facility or Service, and Ownership by the U.S. Government.

2. Survey Responses – Program Assessment

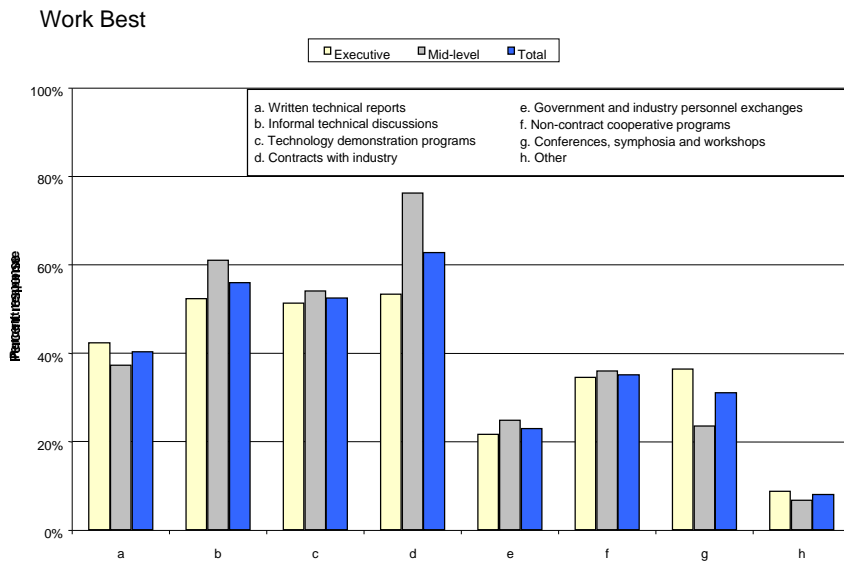
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2.3 Level of satisfaction with NASA's ASTT Program

2.3.2 Technology Transfer

10. Which methods of technology transfer work best for your organization, then which work moderately well and finally those that work least well?

Selections of “work best”, “work moderately well”, and “work least well” are shown in separate graphs on the following pages.



- Mid-Level Managers felt that Contracts with Industry were the best method of technology transfer, followed by Informal Technical Discussions.
- Executives indicated that three methods worked best; Informal Technical Discussions, Technology Demonstration Programs, and Contracts with Industry.

2. Survey Responses – Program Assessment

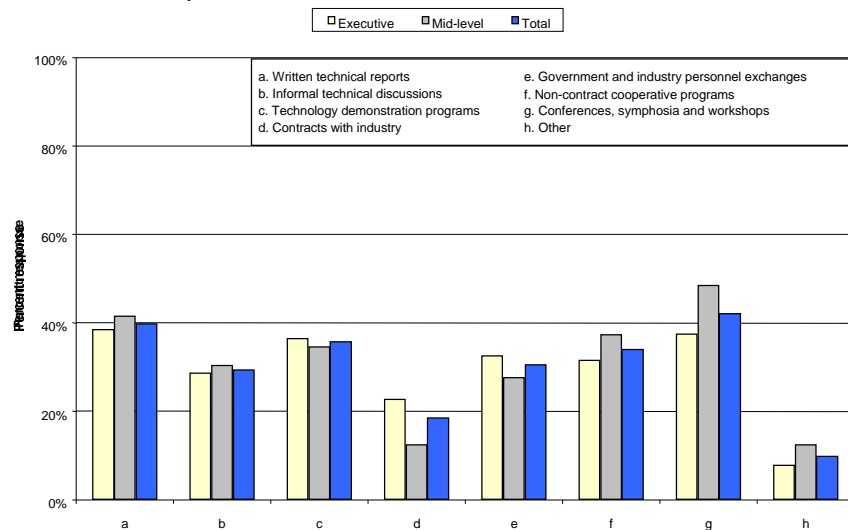
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2.3.2 Technology Transfer

10. Which methods of technology transfer work best for your organization, then which work moderately well and finally those that work least well?

Selections of “work best”, “work moderately well”, and “work least well” are shown in separate graphs on the following pages.

Work Moderately Well



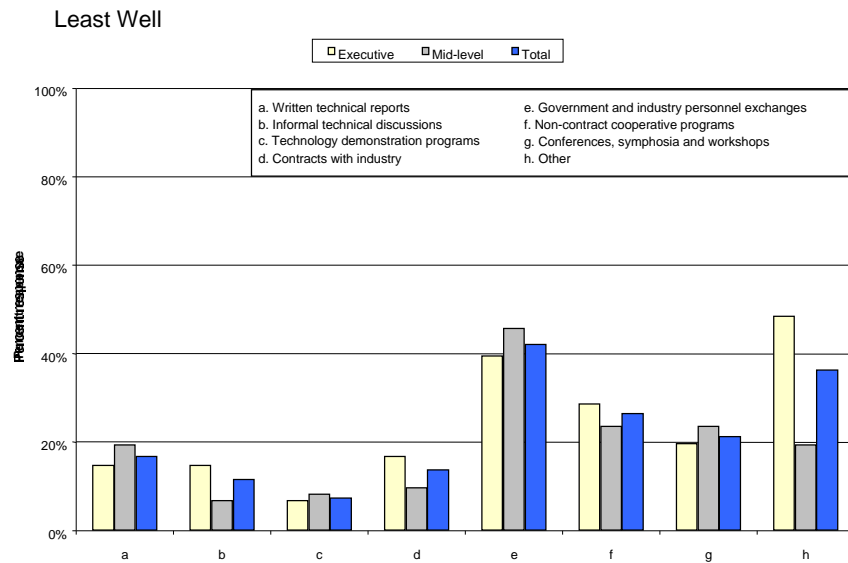
- In general all methods seemed to work Moderately Well for both Executives and Mid-Level Managers.

2. Survey Responses – Program Assessment

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2.3.2 Technology Transfer

10. Which methods of technology transfer work best for your organization, then which work moderately well, and finally those that work least well?



- Both Executives and Mid-Level Managers stated that Government and Industry Personnel Exchanges worked least well for technology transfer.

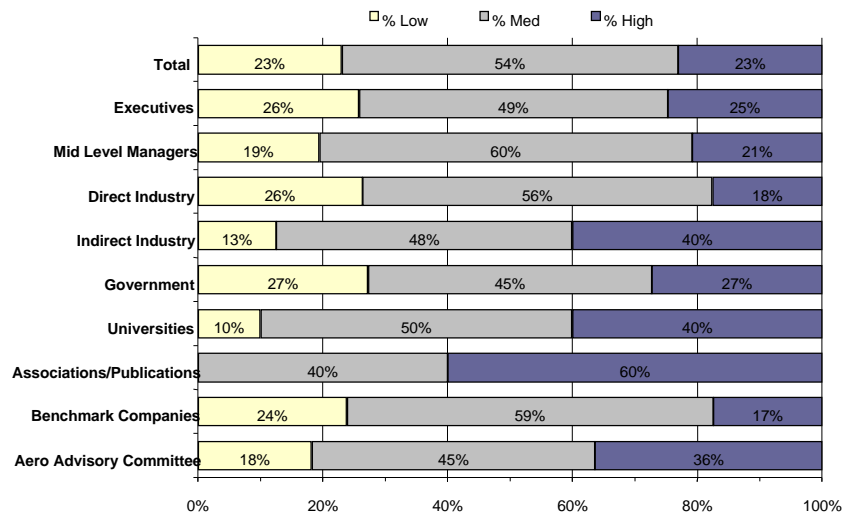
2. Survey Responses – Program Assessment

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2.3 Level of satisfaction with NASA's ASTT Program

2.3.3 Program Planning

11. How would you rate NASA's program planning?



- NASA's Program Planning scored generally higher this year than in 1995. Overall, 23 percent of respondents ranked it "high" compared to 20 percent in 1995, and 54 rated it "medium" compared to 46 percent in 1995.
- Associations/Publications gave it no "low" ratings and 60 percent "high" rating. The next closest "high" rating was Indirect Industry and Universities both at 40 percent, followed by AAC Members at 36 percent.
- The lowest scores came from Government with a 27 percent "low" score, Executives and Direct Industry both giving 26 percent "low" rating, followed by Benchmark Companies with 24 percent "low".
- The most frequent response was "medium" ranging from Mid-Level Managers at 60 percent to Associations/Publications at 40 percent.

2. Survey Responses – Program Assessment

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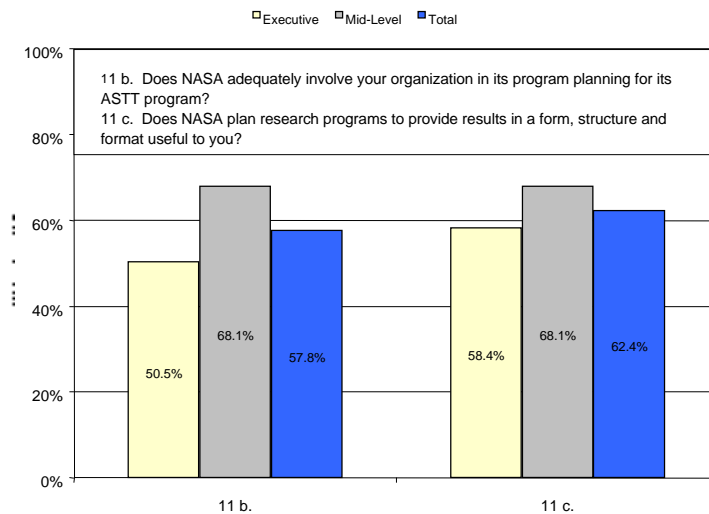
2.3 Level of satisfaction with NASA's ASTT Program

2.3.3 Program Planning

The next two questions (11b and 11c) were yes/no questions and are shown in one graph.

11b. Does NASA adequately involve your organization in its program planning for its ATT program?

11c. Does NASA plan research programs to provide results in a form, structure and format useful to you?



- 68 percent of Mid-Level Managers felt NASA included them in their program planning for ASTT.
- 51 percent of Executives felt they were included in the ASTT program planning.
- 68 percent of Mid-Level Managers felt that NASA planned research programs to provide results in a form, structure and format useful to them.
- 58 percent of Executives felt that NASA planned research programs to provide results in a form, structure and format useful to them.

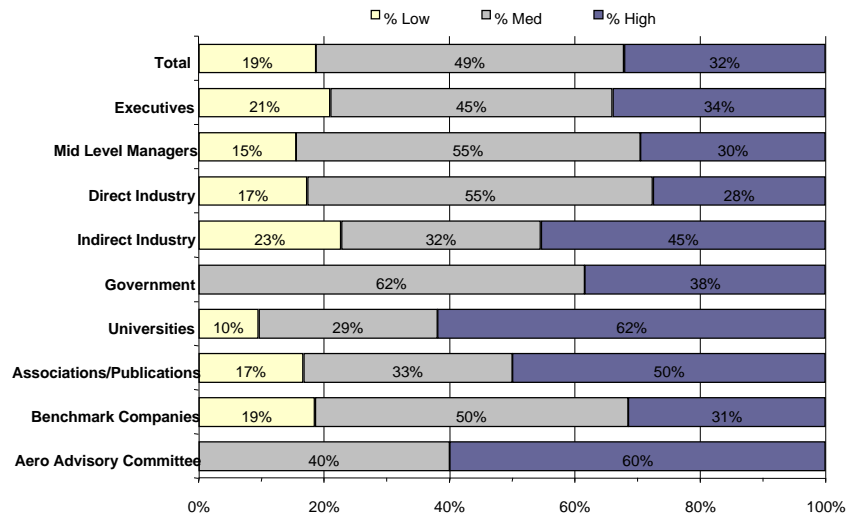
2. Survey Responses – Program Assessment

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2.3 Level of satisfaction with NASA's ASTT Program

2.3.3 Program Planning

12. How would you rate NASA's Outreach and External Communication?



- Total ratings on Outreach and External Communications were good with 81 percent “medium” and “high”.
- Both Government and AAC Members gave no “low” rating. Universities and AAC Members gave the highest ratings with 62 percent and 60 percent respectively.
- The other groups' scores reflected the total group scores.

2. Survey Responses – Program Assessment

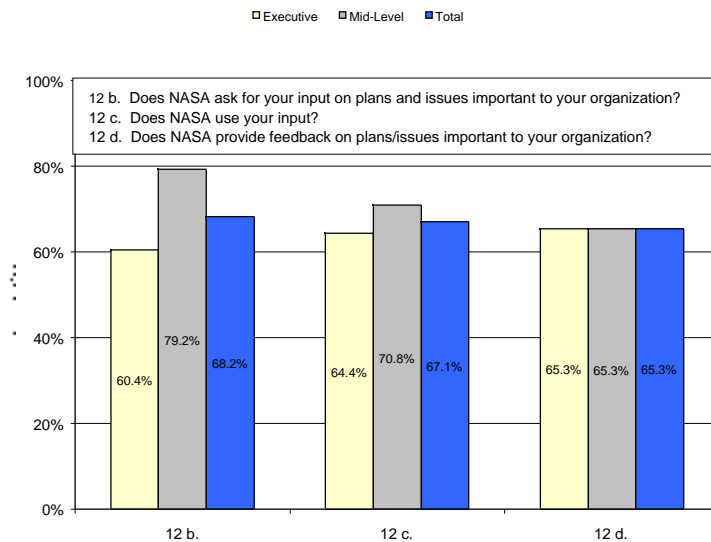
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2.3 Level of satisfaction with NASA's ASTT Program

2.3.3 Program Planning

The next three questions (12b through 12d) were yes/no questions and are shown in one graph.

- 12b. Does NASA ask for your input on plans and issues important to your organization?
12c. Does NASA use your input?
12d. Does NASA provide feedback on plans/issues important to your organization?



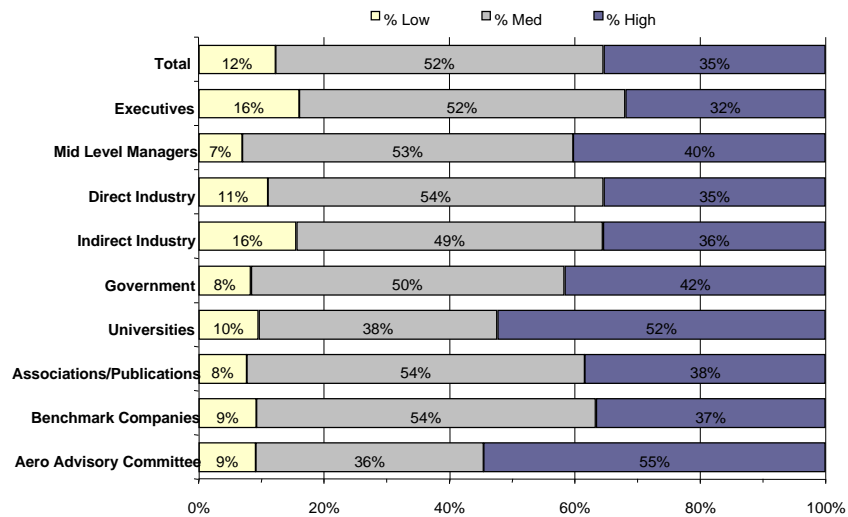
- 60 percent of Executives felt that NASA asked for their input on plans and issues important to their organization, while 79 percent Mid-Level Managers felt the same.
- 64 percent of Executives felt that NASA used their input, while nearly 71 percent of Mid-Level Managers felt their input was used by NASA.
- 65 percent of both Executives and Mid-Level Managers felt NASA provided feedback on plans/issues important to their organizations.

2. Survey Responses – Program Assessment

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2.4 Level of Satisfaction with NASA

13. What is your overall level of satisfaction with NASA?



- The overall satisfaction with NASA is very high, 87 percent of the total group giving it a rating of “medium” or “high”. This compares with 85 percent in the 1995 survey. The “high” category increased from 28 percent in 1995 to 35 percent in 1998.
- All the other groups rating very closely reflect the total rating.
- AAC Members and Universities registered the highest satisfaction with “high” ratings of 55 percent and 52 percent respectively.
- No groups’ “low” ratings exceeded 16 percent shown by both Executives and Indirect Industry.

2. Survey Responses – Program Assessment

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2.4 Level of Satisfaction with NASA

13b. In what areas are you most satisfied with NASA?

Technology development, cooperative programs, planning, and space programs were often mentioned as those areas with which respondents are most satisfied.

Executive Responses	Group
Performance of existing programs that are not being influenced by politics and subjective input, for example the access to advanced space transportation.	Direct Industry
Cooperative research programs and focus program participation.	
High-speed research, R&D base, and advanced subsonics.	
Space shuttle program.	
Technology objectives and plans.	
Technical interaction particularly with computational fluid dynamics people.	
Increasing attentiveness to the needs of US industry. Improved communication with industry in the process of executing contracts.	
Overall management of GAP program. NASA has made many very valuable technical contributions.	
Planning process, vision for aeronautics, and the customer-intended focus.	
The aeronautics programs, the next generation design tools, space transportation, and space science, especially in the area of the unmanned space science programs.	
Technology demonstrations.	
Good job getting input from industry. Good facilities and people.	
Quality work, quality reports/results and availability.	
Involvement in program planning. Promulgation of results. Quality of personnel.	
Willingness to support high-risk ventures/programs.	
Headquarters' interest in having a positive national economic impact through technology development.	
Space science and exploration of space; access to space.	
Technology leadership, forward outlook, leading edge of new technology.	
Space technology, aeronautics technology reports, NASA facility support (wind tunnels, simulation) and Bob Whitehead and Jack Daley National Rotorcraft Technology Center, NASA Ames.	
Enthusiastic and creative, good scientists.	

2. Survey Responses – Program Assessment

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Attempts to understand FAA requirements and structure as they build program research.	
Technical reporting and technology transfer.	Indirect Industry
The AGATE program is done quite well, as is the airfoil performance analysis assistance service.	
Science and interplanetary exploration	
The mid-high Mach number aerodynamics and their computational applied research.	Universities
Really like space exploration, really exciting for students, and communicating the results to the public. Pleased to see NASA work on kids' programs and web sites. Glad to see revitalization of interest of public in space.	
Identification of aviation safety and high-speed research Goals, their interest in coupling fundamental research with engineering.	
Pleased with outreach, extremely responsive in supporting schools in aeronautics and space.	
Collaboration between faculty, scientists, and engineers. Sustained funded projects with Universities.	
Technical capability in human factors area.	Associations
Communication, outreach, seeking information from industry on setting their priorities, particularly in the safety program.	
Mid-Level Manager Responses	
Providing a stimulus for providing break-through concepts.	
Complex program planning. Ask for input; make a really good attempt to be customer focused to provide us what we need.	
Level of technical expertise, level of technical exchange, willingness for cooperative programs, involvement with planning.	
HSR.	
Technology development, cost of programs to benefit country, NASA and industry.	
HSR, environmental compatibility.	
Dialogue and technology.	
Next generation launch system initiatives like future-X.	
Allowing customers to lead technical development. Resources (facilities and testing capabilities).	
Personnel are first rate, and basic research programs, fundamental data.	
Faster, better, cheaper. Privatization. Technology push. Exploration. Willingness to change.	
Access to space vision.	
Willingness to take technical risks.	
Planning process with industry and university involvement.	
Wind tunnels and analysis.	
Focused program execution - AST. Technical workshops.	

2. Survey Responses – Program Assessment

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Aerodynamic shape optimization, flight controls and composite structures.

Their facilities and technical reports, the wind tunnel and the people that support them, but most of all their research and development capability.

Acoustics.

R&T base realignment, AST, composite work.

Conduct and maintain manned space flight and space research. They are keeping vision alive.

High performance computing.

The cooperative programs that NASA has and especially the interaction between our organization and NASA.

The area of critical technology

NASA ability to be successful in our joint project.

Concrete plans, vision, activity looking at general aviation, revitalization of general aviation, money and backing to do something.

Recognize general aviation as a user community. Take lead in general aviation.

2. Survey Responses – Program Assessment

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2.4 Level of Satisfaction with NASA

13c. In what areas are you least satisfied with NASA?

There were a variety of areas with which respondents were least satisfied specific items concerned funding, contracting, individual company's programs, competition with industry, and problems with facilities.

Executive Responses	Group
Affordable air travel Goals quality and applicability of the specific goals and NASA increasingly overlapping with industry roles in competitive activities.	Direct Industry
Responsiveness to suggestions for change. Test facility support. Computational resources. Also their tendency to be too enamoured with systems integration.	
Inability to do meaningful multi-year planning.	
NASA's recent shutdown of test facilities, constantly making the bean counter approach to industry's use of the facilities.	
NASA needs to enhance its ability to articulate in the areas of aeronautics and technology. They need to gain the backing of the Office of Management and Budget (OMB) and the White House regarding petty acquisitions relating to NASA programs as corporate welfare. They need to add ReCAT research. NASA's inability to deal with planning modifications, replacement, or ordering of a new space shuttle; disillusion the manned flight space reassert points. They need to incorporate a detailed cohesive plan.	
Technology transfer, they don't see the implications of technology.	
Large companies appear to have a disproportionate amount of attention from NASA.	
Funding bureaucracies-lack of flexibility in programs.	
Inability to change with changing needs of industry.	
The timeliness of NASA's activities, generally associated with the 40 x 80 facility shutdown, modeling time there seems to take time and a half and nothing seems to happen.	
I'm not pleased with the focus on their tiltrotor program. The program needs broader support. NASA does not seem to be real active in the area of systems technology, the emphasis could be better. Neither is NASA involved in product development technology, which is very important.	
The centers do not work together. Don't like "fiefdom" at centers, Headquarters is great, but it needs more control.	
NASA's tendency to request specific people to work on specific programs. They seem to not understand the civil business world and how it operates. This also seems to take forever to provide the results of programs that we have been involved with them.	
Technology transfer-cost to industry. Complex paperwork - "nightmare" - multi-page licenses.	
Space station and shuttle, space technology development.	

2. Survey Responses – Program Assessment

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NASA competition with industry.	
The continued emphasis in the space program and particularly the manned space programs.	
Contracting system. Disproportionate number of technical people (low) to management and bureaucratic (too many planners and not enough workers). Poor budgeting or execution on programs. Won't be able to pull off ASTT. Do not follow through with planning, don't have the money, people or time, just re-plan then don't execute. Facilities under-staffed when you use them. Waste of time to depend on NASA; they can't follow through to complete work. Flight program with real aircraft are cut back so much that almost non-existent.	
NASA Langley is territorial and personality-driven. It's a closed culture, doesn't want to share results.	
Aeronautics platform technologies.	
The high-speed travel Goal.	
Intellectual property complexity; overly concerned with environmental issues.	Indirect Industry
Funding competitive research.	
Safety. This area has a serious impact on the direction that the entire industry is heading.	
Air traffic.	
NASA is an organization that still has trouble communicating from top to bottom of their organization. Tendencies like the space station, to sell program on a political basis rather than social or technical basis. Sold to Congress on basis of cooperation with Russia.	
NASA's continued policy to develop technology even, in which commercial development already exists, e.g., buy launch services instead of associated technology.	
Advanced ATC integrated research.	Universities
When grant money is available it comes late, then have to spend it in three months, not six.	
Timing and distribution of funding is awkward. Some aspect of peer review of proposal not adequate.	
Support of university basic research for next generation.	
In the communication of what programs are being started and are underway in the R&T base area and other areas. Basically have to go and be proactive to find out or don't find out about it till its finished.	
Erosion of base research programs.	
Lack of involvement of universities program planning.	
Political motivation of programs rather than requirement developed programs.	
Potential duplication of effort, the slowness with which program progress in an agency. Government vs. private industry, NASA good model on the way government should work, there are always generic complaints, but NASA works well.	Associations
Lack of current emphasis on human factors.	
Mid-Level Manager Responses	
They're behind times on acquisition streamlining. All contracting "rigmarole" cost an awful lot.	

2. Survey Responses – Program Assessment

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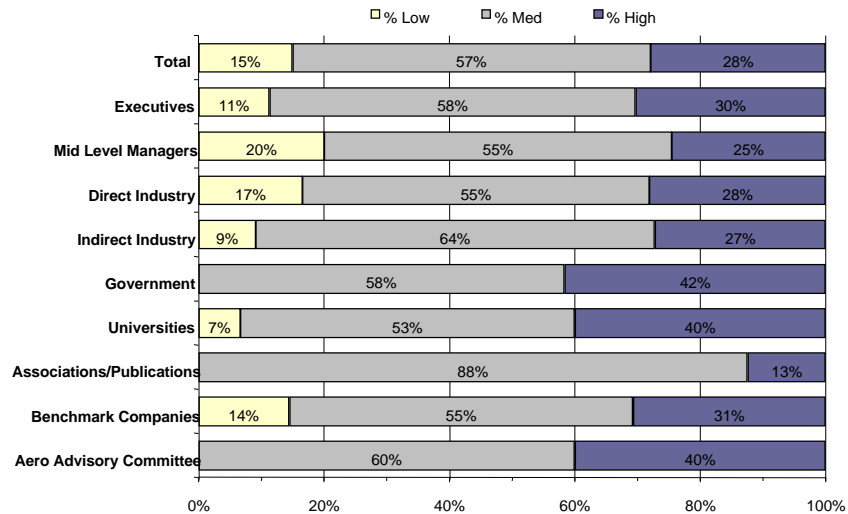
Contracting relationship can sometimes be adversarial. Sometimes a little bit parochial. Dissention between NASA centers.
Funding levels, reprogramming, can't plan ahead.
Handoff of technology is sometimes later than it ought to be.
R&T base--it's non-existent. Facilities and services charges.
Consistent support of critical facilities, business process.
Awareness of technical experts of outside world and business; should exchange personnel.
Communication with customer. Lack of travel money for NASA face-to-face at working level.
Understand that the following are due to budget reduction, however, least satisfied with amount of manned activities. Don't have an overarching rationale to explain to public why we need to do space projects. Need better public relations. Against collaboration with Russians because every time we do we get burned.
Percent of budget consumed by space station and shuttle. Flat budget. Center "fiefdoms".
Industry-led research efforts, don't find commercial uses.
Encouraging foreign participation on critical programs like space station.
Over taxation of resources, poor planning and implementation (too optimistic, not realistic).
Timeliness of results.
Internal politics.
Lack of in-house R&D and expertise.
Poor implementation or follow-through due to funding cut.
Primarily two areas, lack of programs for military needs, and general deterioration of wind tunnel facilities.
Amount of funding in space program-more needs to go to aeronautics.
General aviation research and some of the safety issues that relate to the GA class of aircraft.
In my dealing with NASA there are no areas that I'm not satisfied with.
Technology conversion to industry (sometimes NASA has mindset). Technology overshadowed by NASA theory. "Must bid or must lose"
Consistency of program direction.
Getting technology out to industry, specifically getting high-speed computer software out to industry.

2. Survey Responses – Program Assessment

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2.4 Level of Satisfaction with NASA

14. What is your overall level of satisfaction with NASA's ASTT products?



- Overall rating of NASA's ASTT products showed a combined "high" and "medium" rank of 85 percent. However this high combined rating reflects the high percentage of "medium" scores equaling 57 percent, which holds true for all groups.
- Associations/Publications, AAC Members, and Government gave no "low" scores, but their medium scores are 88 percent, 60 percent, and 58 percent respectively.
- Those groups that rated the products the lowest were Mid-Level Managers at 20 percent, Direct Industry at 17 percent, Benchmark Companies at 14 percent and Executives at 11 percent.

2. Survey Responses – Program Assessment

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2.4 Level of Satisfaction with NASA

14b. What products were you most satisfied with?

Total	Executive	Mid-Level	Responses
23	9	14	High Speed Research/Travel and High Speed Civil Transport
17	15	2	Computational Fluid Dynamics/Computational Analysis
15	8	7	Research and Technology Base
14	4	10	Advanced Subsonic Transport/Subsonic Research
13	4	9	Experimental Aircraft (X - 33, X - 34, X - 36, Hyper - X, Future - X)
13	13	0	Technical Reports/Symposia
12	7	5	Use of NASA Facilities
10	4	6	Next Generation Design Tools and Design/Analysis Tools
10	6	4	Reduce Noise
9	5	4	Rotorcraft/Tiltrotor
7	7	0	Advanced General Aviation Transport Experiments
7	7	0	General Aviation Propulsion/Propulsion Research
7	3	4	Reduce Emissions
6	4	2	General Aviation Revitalization
5	3	2	Access to Space/Space Technology
5	5	0	Advanced Structures
4	2	2	Reusable Launch Vehicles
3	0	3	Blended Wing/Body
3	3	0	Environmental Research Aircraft and Sensor Technology
3	3	0	Human Factors
3	3	0	Increasing Aviation System Throughput/Capacity
3	0	3	None
3	3	0	Reduced Cost of Air Travel
3	3	0	Safety
2	2	0	Administrative - Shift to Mission Effectiveness/Multi-Year Contracting
2	0	2	Global Civil Aviation
2	2	0	Light Metals Technology
2	2	0	Technology Demonstrations
Numerous Answers with a Single Response			

2. Survey Responses – Program Assessment

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2.4 Level of Satisfaction with NASA

14c. What products were you least satisfied with?

Many respondents were very satisfied with products, most who were not focused on their company or project concerns.

Executive Responses	Group
Efficiency of industry workshops, program plans, environmental compatibility. Congressional approval resulting from their interaction with Congress.	Direct Industry
Work done to support need for high Reynolds number transonic wind tunnel.	
Test facility readiness non-appropriate system integration plans. Computational resources.	
Shuttle upgrade program - space station took all the funding. Lack of focus on long range goals – stop/start programs are inefficient and frustrating.	
Critical technology (R&T base).	
Marginal in the areas of the X-33 and X-34 program and the instability in the ReCAT project.	
Lacking of implementation plan due to scaling with commercial setting.	
Hyper X, behind Russian and repeating what Russians did 10 years ago.	
Materials (metal), coatings area, quantity and quality of products, i.e., materials.	
Don't know what products are, or how to find them.	
There's nothing in the unmanned vehicle area or product and process technology. Are we moving in the right direction in the area of space? NASA seems to have too many eggs in a single stage, which may not work. Active commitments need to be in the areas of systems technology, transmission technology, NASA staffing and the issue of funding.	
Integration of computing and aeronautics technology.	
Again, the AGATE program. We as industry and a partner in the AGATE consortium haven't received what we thought we would out of the program considering our investment in the program.	
Aviation Safety Program, X-33.	
The ones that really effect me such as noise levels and environmental issues.	
AGATE flight systems.	
System integration-best left to industry.	
The overall emphasis under the Global Civil Aviation Pillar. The general aviation revitalization goal is not proceeding very well. I haven't seen anything come out of the affordable air travel area and safety; seems to be just an [administration] issue with no core.	

2. Survey Responses – Program Assessment

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Those that don't have the cooperative character. Those that are individually run, i.e., only a NASA program, suffer territorial character, that I believe is personality driven.	
Lack of aeronautics platform technology, funding. Scarcity of aero advanced concepts, collaborative R&D and facilities planning among NASA, FAA, and DOD.	
Technology transfer is the area or feature that doesn't let products be real.	
Space transportation and hypersonic testing facilities.	
High-speed test facilities, delays in processing orders.	Indirect Industry
The way the technical detail of a product or service are provided in a very general scope.	
Air traffic.	
Weather data incorporation in pilot decision making is abominable for GA pilots.	Universities
National transonic facility and nothing really happening on space side to replace shuttle. Concerned will not make goals on access to space as printed in goals list.	
Trailing vortex alleviation, hard to know if problem was so difficult or if program failed. Flying rotor test bed, RSRA and X-wing just about as bad.	
Not sure where whole AGATE program is going, what objective is, and where it all stands.	Associations
Environmental – clean engines for rotorcraft.	
Mid-Level Manager Responses	
HSR	
Don't have a "least".	
Space related.	
Facilities.	
Full-cost accounting resulting in budget cuts and diminished expectations.	
Technology transfer between larger corporations and NASA and government (as on HSR program).	
Environmental, affordability, design tools, access to space.	
Delta Clipper.	
Advanced design GA.	
Hypersonics, air breathing propulsion.	
General aviation.	
High-speed research products.	
No delivery on new products.	
Wind tunnel arena, lack of availability or out of date.	
Planning of goals, planning of ReCAT program!	

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No products just theory in Revolutionary Technology Leaps or Access to Space.

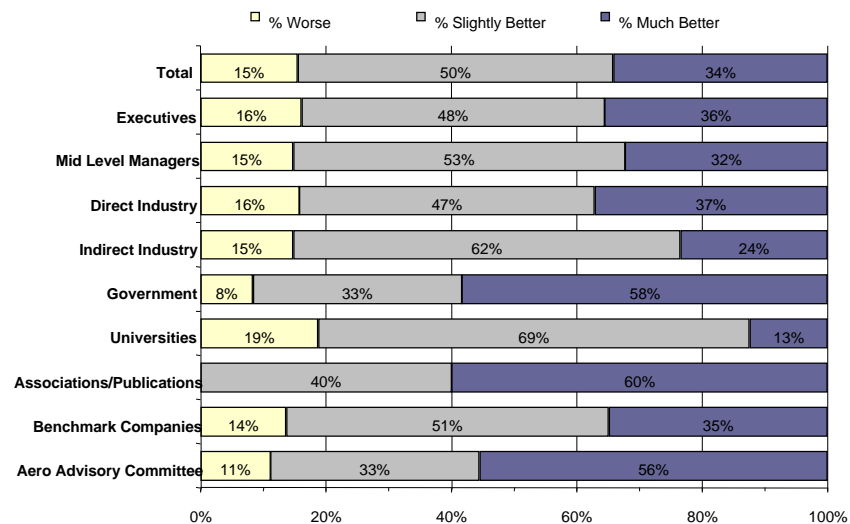
X-33, 34, technology transfer.

2. Survey Responses – Program Assessment

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2.4 Level of Satisfaction with NASA

15. How does your organization's overall level of satisfaction with NASA compare with its satisfaction 3 to 6 years ago (before the last surveys)?



- 84 percent of the respondents rated their satisfaction “slightly better” or “much better”. This compares with 71 percent in 1995. In 1995, 36 percent rated satisfaction as “much better,” while 34 percent rated satisfaction “much better” in 1998.
- Executives, Mid-Level Managers, Direct Industry, and Indirect Industry’s ratings follow the total mix very closely. The other five groups, Government, Universities, Associations/Publications, Benchmark Companies, and AAC Members’ ratings vary significantly.
- Associations/Publications show no “low” ratings and Universities have the highest “low” rating at 19 percent. Associations/Publications, Government and AAC Members gave the highest ratings at 60 percent, 58 percent and 56 percent.

2. Survey Responses – Program Assessment

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2.4 Level of Satisfaction with NASA

15b. In what area(s) has your level of satisfaction increased?

Aside from specific technology areas respondents felt that there was good improvement in the ability of NASA to work with their customers particularly an improvement in communication.

Executive Responses	Group
Alignment of research to the Pillars. Six years ago there was inefficiency and lack of focus.	Direct Industry
High speed research.	
Supersonic, provide next generation design tools, subsonic, base R&T and facilities.	
Shift from micro-management to a partnership relationship.	
Computational fluid dynamics tools.	
Emphasis improved on R&T (fundamental research).	
Space transport.	
Communications. Receptiveness of small industry's opinions.	
Emphasis an aeronautics and cultural changes—partners with industry.	
Planning process.	
Involvement and visibility of NASA plans and goals.	
NASA Aeronautics is beginning to appreciate the need of their customer.	
More responsive to time and focus of work and results.	
NASA seems to be listening more in the area of rotorcraft. They also seem to be talking about when/who/what/and where of rotorcraft and they appear to be talking to us, industry, more also.	
Willingness to embark on new high risk ventures. Increased emphasis on unmanned aircraft.	
Just in being part of their activities, we're in a partnership with them. Our relationship has grown by leaps and bounds.	
More decentralization-moving decision making to centers.	
Focus on low-cost access to space.	
The advanced terminal operations program (ATOPS), the non-contractual cooperative programs, and the technology demonstrations.	
Technology sharing.	
Accessibility and the reduced degree of funding competitive research. Increased emphasis on flight safety.	Indirect Industry

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Program information, regarding the availability of services and programs.	
Access to space, high speed research.	
Safety, commercial technology, environmental.	
Diversity and relevance of the grant project.	Universities
Management of NASA Ames, civil aviation.	
Interface between university, scientists and engineers of NASA. Improving access to facilities.	
General Aviation revitalization.	
Emphasis on aviation.	Associations
Outreach to industry and aviation community.	
Identify user needs.	
Mid-Level Manager Responses	
Think we've been given an opportunity for more input, there is more interaction in developing the goals. NASA seems to be more ready to go into a risk-taking mode. I like the revitalized interest in space.	
Overall coordination with discussion-goals.	
More focused efforts relevant to industry.	
They're all still listening.	
Program planning, working with industry.	
None.	
Technical transfer, industry contracts, focus programs.	
Goal-setting process was good, aeronautics program management.	
Openness and cooperation, communication, willingness to embrace industry needs	
Hasn't changed.	
Increase cooperation in technical development.	
The way they run workshops--more open. Much better communication with industry.	
Willingness to listen to customer on facilities issues	
Better relations with individuals, understand organization and the players better.	
Contract work. Ground-test facilities.	
Responsive to customers, Not so AIAA oriented.	
Facilities and services and willingness to work with industry--less "us versus them".	
General trend is innovative access to space high risk, high-payoff stuff.	

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HSR- communication, planning, seeking input. AT-- technology transfer, more focused applied research.

Four to seven years ago NASA didn't listen; then 2-3 years ago they did; now they don't listen again.

Environmental areas.

The availability of their facilities and especially the access to the high speed computing facility.

More business oriented.

Open to new ideas.

Aggressiveness of involving industry in programs. Keeping industry aware of technology developments.

The way NASA meets its mission requirements.

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2.4 Level of Satisfaction with NASA

15c. In what area(s) has your level of satisfaction decreased?

Many respondents said there were no areas where their satisfaction had decreased, those who commented focused on service from the facilities/centers and problems associated with reduced funding, and focus on space at expense of aeronautics.

Executive Responses	Group
Large experimental facilities, critical technologies R&D.	Direct Industry
Systems integration emphasis and computational resources. Test facility readiness.	
Reusable launch vehicle.	
Availability of wind tunnel test facilities, reduced emphasis on R&T base for aeronautics.	
There isn't so much here except for the long term planning for the space shuttle replacement. Someone has to get on with the life of the program and get to phase 3 and 4. Can we really afford \$3 billion a year for shuttle operation? The cost of the shuttle and the pressure relating to its budget, especially carrying people, is a problem. NASA has nothing beyond the shuttle and the shuttle is too high cost to fly. We need to move on.	
Wing/fuselage area.	
Availability of contracts with industry.	
Continued focus on space at the expense of aeronautics.	
Especially the hypersonic X programs. This program is a waste of resources. The amount of money spent on this program would have been better spent in the area of fundamental research. NASA wants to sell its strategy and continually gets caught up in the sell issue. The fundamentals are more difficult to deal with, but provide much better results.	
Loss of flexibility in applying research/technology (R/T) base to new, innovative ideas. Advent of 5-year focused programs has reduced flexibility of new ideas for research unless they can be directly applied to focused program. Joint industry/NASA council should be used more effectively.	
I think the most important is the condition of NASA's deteriorating facility support.	
The dollar issue to do basic research has gone down. There needs to be additional funding to support research in structures, advanced aerodynamics, and systems. This has led to NASA doing a poor job in the research area of exploring the environment affect of flying through weather. They should have use of a better systems approach.	
Centers continue as independent fiefdoms and ignore headquarters.	
Lack of interest in high performance military aircraft. Morale of NASA has decreased due to uncertainty in national environment.	
Difficulty in dealing with NASA as a customer.	

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NASA never seems to finish the work that they start. They get involved in the political band wagon and don't appropriately finish the project.	
Significantly less satisfied with rotorcraft, civil tiltrotor, and general aviation. The advanced rotorcraft consortium organization excludes more and more people to become a club. It therefore has closed doors to new ideas not already in the works. NASA beholden to small number of people and ideas.	
More interested in commercial success than agency mission.	
Clarity of research goals and lack thereof.	
Human factors, human performance, focussed air transportation products, and performance, e.g., wind shear.	Indirect Industry
Way too much attention and expenditure on space station.	
NASA's continued policy to develop technology even in which commercial development already exists, i.e., buy launch services instead of associated technology.	
Ability to conduct basic research, too much emphasis on the process rather than the products.	Universities
Funding for university sponsored research.	
Gotten away from one-on-one contacts. NASA's Internal level of expertise has declined.	
NASA is now a competitor to university laboratories, not good for the nation.	
Management characteristics. More "CYA" thus less believable. Mismanagement of space programs.	
Quality of space products.	Associations
Management support to human factors research.	
Lower level of response to needs.	
Mid-Level Manager Responses	
Base R&T products reduced to increase focused programs, shouldn't have facilities increase charges.	
Ability to maintain program direction due to money cuts.	
Allowed very capable management people escape, management is now not so hot.	
None.	
Change to full cost accounting not planned well with industry.	
Amount of activity with industry.	
Industry competing with NASA centers.	
Relationship between NASA and other organizations. Should be working together, not fighting others for funding.	
Quality of fundamental work. Loss of expertise downsizing.	
Budgeting process too subjective/ too political.	
NASA almost a competitor in certain arenas—shouldn't be.	
Space research, advanced recoverable vehicles.	

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Cost share on technology support.

Responsiveness in new areas of effort.

Capability to privatize shuttle program. NASA to stick to technology not operations.

Services offered, technical expertise.

Prioritization aeronautics.

Decision making, time-consuming.

Fewer smaller technology program activities –bad.

Continuous change in goals and funding structure.

Back to wind tunnel arena, lessening of focus of military applications.

Lack of activity in rotorcraft area.

Commitment to subsonic transports, shouldn't have "program du jour"!

Technology priorities.

Try to do too much themselves.

The non-steadiness or rough manner in which NASA handles its programs and personnel. The programs seem to lack an essence of completeness and there seems to be a lack of dedicated personnel to work a program.

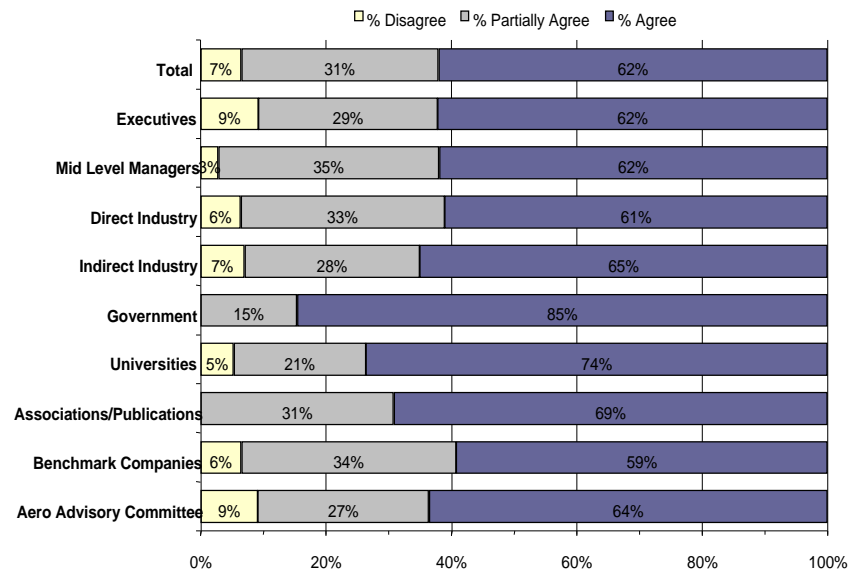
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2.5 Resource Management

Participants were asked to agree or disagree with the following statements rating their degree of agreement on a scale of 1 to 10, followed by a qualitative question.

16. NASA provides key laboratory, computing, and test facilities.



- The responses to this question had some of the highest ratings of all the questions. There were no “agree” rating lower than 61 percent and no “disagree” rating higher than 9 percent.
- Government gave the highest “agree” rating at 85 percent, 15 percent “partially agree”, and no “disagree” scores.
- The highest “disagree” scores were Executives and AAC Members at 9 percent each, but had combined “agree” and “partially agree” scores of 91 percent.

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2.5 Resource Management

16b. What NASA facilities do you view as being essential to the conduct of leading edge R&D?

The overwhelming answer to this question was the wind tunnels, followed by computational resources, the comments below present additional comments.

Executive Responses	Group
Advanced human factors simulators, wind tunnels, structure labs.	Direct Industry
High Reynolds number subsonic and transonic test facilities.	
Modern wind tunnel test facilities and world class computational resources.	
Space test facilities at Stennis Center.	
Test facilities at all speed regimes, computational fluid dynamics, and turbulence and transition modeling	
State-of-the-art technology, modeling, high-speed computation, numerical simulation, rocket propulsion, and the space launch capabilities at the Cape.	
Lewis Research Center—aerodynamic propulsion laboratories, computational capabilities.	
Altitude test facility.	
I do not view any of NASA's facilities as being essential because we can not get into these facilities in a timely manner to do our testing. In product development we can not put NASA in our critical path, because we know that there will be delay after delay after delay. NASA is losing its valuable resources. Its expertise is no longer there for interim research and development.	
The wind tunnel, icing facility and structures group at the Langley center; propulsion/transmission group; high speed computing; aerodynamics group at Langley center; and the GPS/airway support system at the Ames center.	
NASA Langley's Boeing 757 research vehicle and NASA Ames air traffic control emulator.	
There is a series of wind tunnels that the Air Force absolutely depends on. It's the one thing we don't have.	
Long duration tests and space exposure tests.	Indirect Industry
Hypersonic test facilities.	
LARC, wind tunnels, runway traction, deicing, ARC Profile Descents, SATCOM tests.	
Advanced computing, micro gravity facility, and their propulsion capability.	Universities
Langley - GPS, CAT, Lewis – airfoil research.	Associations
Simulation capability. Ability to get Federal funding to get research accomplished.	

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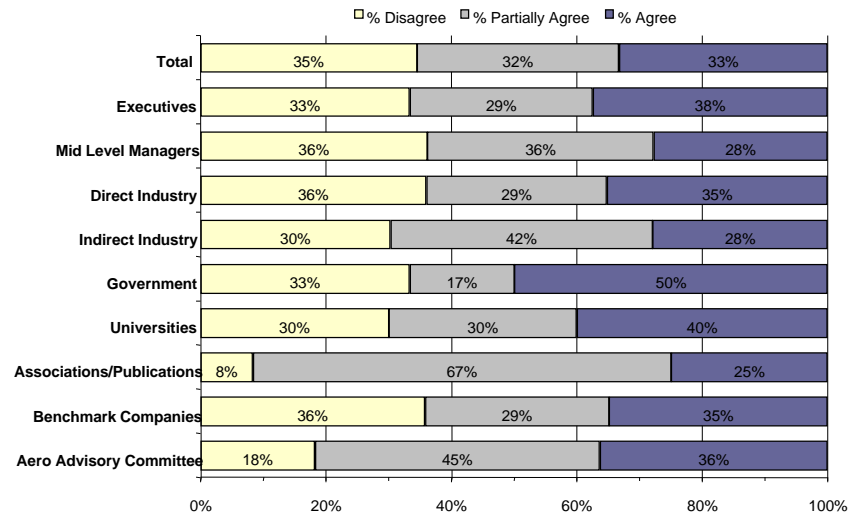
Mid-Level Manager Responses
Wind tunnels. Computing capability. Don't find much unimportant.
Wind tunnels, flight research center and advanced computation facilities.
Wind tunnels, flight test facilities, simulators.
Wind tunnels, computational facilities, structural facilities.
National transonic facility. Ames 11' wind tunnel.
Stennis and Marshall—propulsion test stands. LaRC--wind tunnels.
NTF, Ames 12-foot tunnel, Dryden, super computing resources.
First Tier- White Sands, Lewis, Johnson, Marshal. Second Tier (less good) - Langley and Ames.
Eleven-foot wind tunnel at ARC. Low Pressure turbine tunnel. Twelve-foot pressure tunnel at ARC.
7X10' wind tunnel at Ames, National Acoustic Facility at Ames, low turbulence pressure tunnel – LaRC, 11 X 14' tunnel --LeRC and LaRC, quiet flow facility at LaRC, basic aerodynamics research tunnel at LaRC.
Stennis space center.
Super computing - ARC, propulsion – LeRC.
Research centers.
Acoustics facilities.
Materials testing capability, wind tunnels.
Airborne test beds. Simulation and flight facilities.
Dryden, LaRC.
Lewis Research Center-turbo machinery research.
The computational and equipment fabrication facility at Lewis.
The facility that provides research in the area of heat transfer cells at NASA Lewis. But this facility needs better resources.
The facilities that support access to space transportation and moving into the space station. In addition, those facilities that are investigating issues associated with the micro-gravity research.

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2.5 Resource Management

17. NASA downsizing has affected its ability to support its customers.



- An “agree” score here means the respondent thought that downsizing had *negatively* affected the ability of NASA to support its customers.
- The total scores are evenly distributed among “disagree” at 35 percent, “partially agree” at 32 percent and “agree” at 33 percent and reflect most of the group responses.
- Three groups have responses different from the total, Government, Associations/Publications, and AAC Members.
- Government, although having a 33 percent “disagree” score close to the total, has the highest “agree” score of 50 percent.
- Associations/Publications has only an 8 percent “disagree” score and a 67 percent “partially agree” score. AAC Members have a low “disagree” score of 18 percent, and although their “agree” score of 36 percent reflects the total, their “partially agree” score of 45 percent.

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17b. In what ways, if any, has NASA downsizing affected your organization?

While many felt NASA downsizing improved efficiency, others felt it has led to reduced ability to support facilities creating lack of service, and loss of expertise.

Executive Responses	Group
Support of wind tunnels is an issue and loss of key programs in advanced subsonic area.	Direct Industry
In NASA refocusing to protect state interests related to layoffs, i.e., when one area was doing inefficient things they couldn't layoff in a particular state because its Congress member was too important.	
Foundational research is not getting done.	
Primary to loss of key NASA expertise and missing expertise is not being replaced. Referred to as NASA's aging fleet.	
Very positive effect - less micro-management - more of a partnership.	
Haven't downsized enough.	
Restricted testing-reduced access to computational fluid dynamics computing.	
Headquarters level of competence has decreased. Good people overworked so that attention is less than it could be.	
Cancellation of existing contracts due to severe budget cuts and reallocation of resources	
Less contact with technical personnel both at centers and headquarters.	
Delayed and/or prevented completion of certain aerodynamic computational computer programs.	
Not much effect.	
The downsizing and early retirement has wiped out a lot of NASA's corporate knowledge and expertise in both aeronautics and space. They have lost their critical skills that reside in their civil servant base and have built up a network of support contractors who have the knowledge, but who are not always willing to share that knowledge.	
We are starting to reduce our alliance on technologies developed by NASA.	
None perceived.	
They have been able to do more with less. The downsizing has now started to affect what they can do. NASA still devotes too much toward space services rather than the aeronautical sciences.	
Amount and pace of work accomplished decreased. Increase in NASA focus and efficiency.	
Pushes industry to do more R&D.	
Helped since NASA is now less competitive with industry.	

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It hasn't affected this organization.	
Instead of being co-collaborators they have become contract monitors.	
It has increased our ability to exploit the energy between both NASA and our organization.	
Reduced the national investing in rotorcraft technology, aeronautics platform technology, wind tunnels technology, and fallen back in foreign competition.	
It has caused NASA to work closer together with our organization in both communication and cooperation.	
When moved rotorcraft to Ames and Dryden, people left who didn't want to make physical move. Lost experience base that they will never recover from.	
Coordinate better now coverage scarce resources money and people.	
Reorganizations caused the problems with center-to-center rivalry.	Indirect Industry
One study that we were involved in (human factors) did not have adequate follow-up on human factors research project.	
Limited interface, and it has caused ambiguity of who is in charge of what area as reorganization has gone down, its impossible to keep track of who is responsible for what programs.	Universities
I think money in the base goes to other things. Has meant that there is less money to go into basic research.	
Individual university grants have declined significantly, R&T base funding has declined.	
NASA has done pretty well. Cannot say that I've seen any affect from downsizing. NASA's been pretty supportive. They have a greater commitment to aeronautics than a decade ago.	Associations
It's been positive. It's made them take a hard look at programs and from the GA perspective it helped in that they are more focused. More product-orientated versus more programs oriented.	
Mid-Level Manager Responses	
Diminished support for aeronautics due to space station's overruns.	
Limited in what national facilities and cutting edge technology program they can pursue and my observation is they have too few people to try and support what needs to be done.	
Shuffling of personnel.	
Facilities, base R&T products being delivered, general quality of tests.	
Less cooperative work, less cooperative research.	
None.	
Made NASA less capable and more expensive.	
Inability to support current focused programs. Accounting changes. Inability to adequately address critical technology.	
Lost on-site support services and technical support, our engineers have gotten more work.	
Loss of technical expertise, business (contracts, financial management) has slowed down.	
Access to facilities--poor wind tunnel support staffing.	

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Haven't seen any yet.

Have become more efficient to work with.

It has caused downsizing here. The biggest contracts are winding down. Whereas before \$100 million contracts contained lots of burden money. The burden money has dried up. Personnel are spread too thin in many departments. Used to have groups, now only one person. Don't have NASA support. Conference attendance and travel more difficult.

Has caused a morale problem. Minimal wind tunnel support; makes them go to Europe's wind tunnels because immaculate and lots of support.

Aeroelasticity branch-only respond to customers. Not doing fundamental.

Improved communication. Reduced bureaucratic oversight. Improved focus. Speed up all processes.

Reduced research money limits work in R&D.

Access to more of NASA's capability but seems like NASA is competing.

Loss of cooperative programs.

Availability of facilities.

Consolidation of rocket testing at Stennis, more pressure for industry cost-share.

Shallow expertise (limited number of experts).

Inability to obtain internal technical support from NASA.

Less fundamental research; work being done better aligned to organization.

Continuous change in program management, loss of communication between areas inside NASA centers, loss of technical expertise.

Rotorcraft technology development.

Timeliness of process.

It has provided a positive technology transfer.

Less collaboration and more contract monitors.

They seem to rely more on subcontractors than performing the work themselves. This seems to have distracted their focus and defused their effort.

It hasn't affected it at all.

The team that we work with at NASA Lewis is significantly smaller. Other individuals have left NASA for employment that provides more job security than government service.

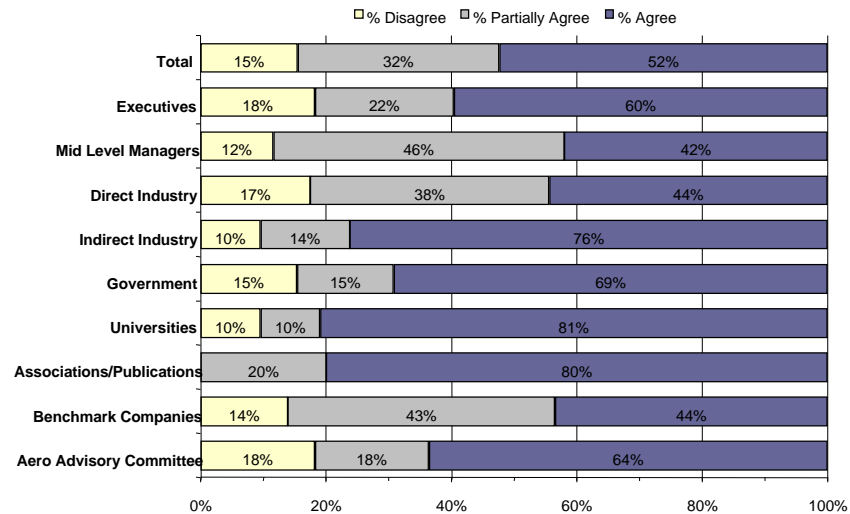
Lack of final products.

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2.5 Resource Management

18. NASA is a key contributor to the education of scientists and engineers.



- The combined scores of “partially agree” and agree” show that all groups feel NASA is a contributor to the education of scientists and engineers.
- Indirect Industry, Government, Universities, Associations/Publications, and AAC Members “agree” strongly with scores of 76 percent, 69 percent, 81 percent, 80 percent and 64 percent respectively.
- The two groups that had the highest “disagree” scores were Executives and AAC Members, both with “disagree” scores of 18 percent.

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18b. In what ways can NASA improve the education and training of our next generation of scientists and engineers?

The main themes were more funding and cooperative programs, as well as more internships. It was also believed that NASA involvement with schools down to the elementary level was important.

Executive Responses	Group
Strengthen university relationships that include industry. Bring industry, NASA, and universities together, and reduce focus in areas that industry pursues independently of NASA.	Direct Industry
Put more money into foundational research in universities best equipped to do that type of research.	
NASA does a much better job than other government agencies at all levels of education.	
Re-instituting university programs where NASA provides seed money to university engineering programs.	
The restructuring and downsizing has definitely affected this area. NASA needs to conduct more cooperative educational programs. They need to develop a program where students can actually work for a semester while still in school, kind of like an intern.	
To be equitable and fair in supporting all universities equally. Now support in direct proportion to geographic nearness to NASA facility (1/R(squared)). They tend to support the one nearest to them.	
Be more involved in setting curricula of engineering schools. More open house events to stimulate younger students.	
Need to have stronger ties to industry. To understand industry's activities and need. Need to support engineers as well as scientists in contributing to education.	
Continue trend of a large number of small projects versus a small number of large projects.	
Increase their cooperative programs with universities. Mentor students. Have more NASA/industry co-op programs.	
Public relation programs aimed at younger folks to kindle their interest early on.	Indirect Industry
Become more involved with industry.	
Provide inspirational project similar to moon shot and Mars Lander	
Summer internship for high school and college students. Support graduate student research at NASA. Increase sponsorship of US born graduates. Persuade elementary school children in mystery of research, show that its fun and rewarding.	
More involvement in elementary schools.	
Target younger children, even in lower grades.	
Improve publicity of programs in cooperation with public television	Indirect Industry
Get to kids before college, open houses, show how exciting aeronautics is, student charted societies at universities.	

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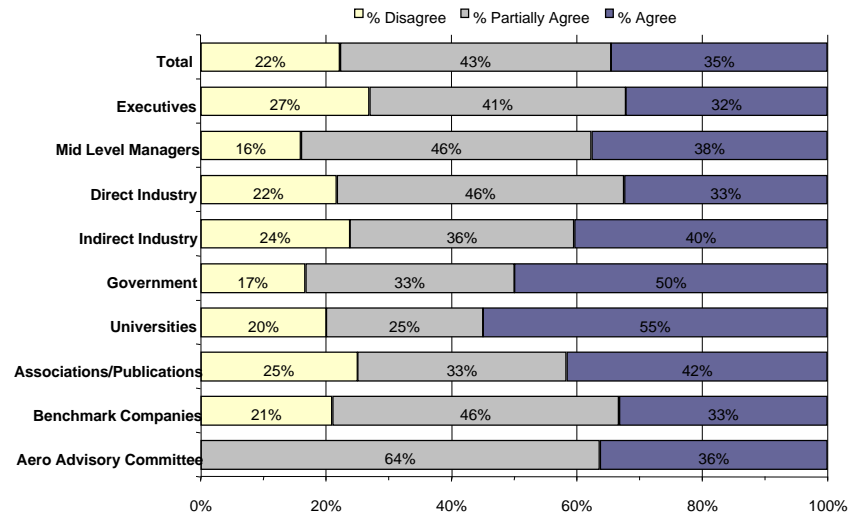
Move away from the traditional aeronautics disciplines to get the best and brightest students from other disciplines (computing, information technology, and biomechanics) interested in aeronautics.	
By making technical information program research available to both graduate and undergraduate students via the internet access as well as wider publications available in library resources. Can't over-emphasize internet availability for both graduate and undergraduate students.	Universities
Go back to sponsoring NASA Traineeships program.	
University, government, and industry should be equal partners, currently university is a poor second.	
Support graduate and undergraduate level research. Enhance cooperative and summer intern programs.	
NASA needs to continue with its fellowship program, grants for R&T studies with universities, and to develop summer collaborative efforts for both faculty and students at all of the NASA centers.	
Creating an environment that encourages pursuit of excellence in fundamental science and focusing on a strong R&T base.	Associations
Increase interaction between NASA and academic community, even down to grade schools.	
Through undertaking more co-funded projects/contracts with industry to advance rotorcraft technology. By promoting student development programs such as the AHS student design program.	
Continue to be active in their education programs, continuing with their our reach cooperative education programs with universities, and support of educational activities in K-12 educational arena.	
Mid-Level Manager Responses	
Create cooperative program between academia, industry & NASA.	
Sponsor events, courses, workshops, advanced training, and more scholarships.	
Elementary focus-industry/NASA work with education/teachers.	
Personnel exchanges; government, NASA, industry.	
Open a university of their own.	
More information on its programs to schools and industry. Real reports, not pamphlets, cooperative programs.	
Arrangement where students work in industry on NASA contract.	
More involvement with universities on inspiration business.	
Doing good job.	
Continue support of universities but focus it on students, not so many professors.	
More "readable" literature, more understandable.	
Increase the availability for students to work with and at NASA. NASA needs to assist these students into getting out of the academic world and more into the reality of research projects.	

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19. NASA cooperates with other organizations to make cost-effective use of limited R&D resources, skills and facilities.



- Most groups generally reflect the total group scores.
- AAC Members had no “disagree” scores, but 64 percent only partially agreed.
- The highest “agree” scores were in Universities and Government with “agree” scores of 55 percent, and 50 percent respectively.
- Except for the AAC Members, who had no “disagree” score, the “disagree” scores ranged from 16 percent with Mid-Level Managers to 27 percent with Executives.

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19b. In what ways can NASA improve cooperation with other organizations?

More communication and coordination was the primary comment.

Executive Responses	Group
Better linkage with FAA requirements and National Science Foundation in what they are doing with universities.	Direct Industry
By in-depth planning and not just viewgraph exchanges.	
Need to build very strong bridge to the FAA.	
Occasionally stop and think about how to be a better service organization.	
Designated cooperative programs with US Navy an Air Force.	
Make every program like the X-36 program. Provide a seamless relationship, slaved destiny, and carry through to a product or material result. Most important recognize failure and deal with it appropriately.	
Talk to and coordinate with DOD and not just by talking but by deeds. Reduce overlap.	
Expanding levels of cooperation with other government agencies as well as corporate world. Develop and participate in technical programs.	
With some of the goals they need to find a way to bring closure with the FAA. This would really help. Actually, this closure should be in the areas of safety, affordable air travel, and addressing the issues of air traffic management.	
This is a very complex question. NASA needs to put their people in with industry through cooperative programs. They also need to use more joint development and technology program on aircraft and systems. Avoid the process of reinventing its role and become more of a doer. NASA can't afford to revise and revise. NASA must be actively involved.	
By helping its personnel to understand the realities and mechanisms of the commercial marketplace.	
NASA does not actually cooperate with other organizations to any extent. It is within their power to change this.	
Improve procedures to help people/companies work with NASA.	
Be more of a partner than a leader.	
Serving customers and listening to customers rather than NASA contractors.	
More public forums, be Members in others organizations, R&D boards, transferring technology to their areas.	
Greater publicity regarding contracting opportunities. Evaluation of a program's worth with regard to whether industry can do it better.	Indirect Industry
I'm not really sure what you mean by the word organization. Is it generic, meaning all organizations or is it specifically referring to just the government? If it refers to generic, then NASA needs to increase in	

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communications between organizations in an effort just to get the word out to ensure that industry is aware of the programs that they have and what is available to industry.	
Maybe more specific agreement on specific areas with Air Force and other branches with regard to access to space. Have done that in past so reasonable amount of overlap.	
By having wider discourse with the FAA and professional societies, which represent the using community all of which should be structured to define, quantify and comprehend operating environment.	Universities
First find out what other organizations are doing. Still some lack of coordination between organizations, for example with the FAA. Often have parallel efforts going and if they don't talk to each other it is unclear what is going to happen at end.	
Inculcate in NASA scientists/engineers the operating principal that free and open exchanges are necessary. Rout out the, "We're in competition with anyone who does similar research," attitude.	
Eliminate NIH factor; Get clearer view of mission.	Associations
Stop fighting with the FAA.	
Increase coordination between different advisory committees including use of industry personnel to eliminate conflicting recommendations.	
Be less parochial—not so inward focused, get outside the aerospace industry and the traditional companies.	
Mid-Level Manager Responses	
Need to improve cooperation with FAA and continue joint military programs.	
Need to open minds to outside NASA facilities.	
Learn to cooperative, no empires, no duplicate facilities, share.	
Work with FAA more.	
Stop being less parochial.	
Increase level of industry contacts.	
More dialogue with DOD.	
Focus technology development programs; leave system development to industry so they can focus on market.	
MOUs to pool resources and work specific issues.	
Improve communication. Become more aware of industry programs to create cooperative programs.	
NASA joint planning, NASA and DOD. DOD should jump in too.	
More pro-active in searching for organizations to cooperate with.	
NASA and USAF must work to eliminate overlap in space programs.	
Listening to all industry feedback not just what they want.	
Asking for their needs. How can NASA help?	
Worldwide view instead of nationalistic of corporation.	

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Needs to reduce some of the competitive research areas.

Through better distribution of information. Information technology enhancements best.

Simplify the contracts and procurement process.

They need more personnel to deal with industry on an organizational to organizational, one-to-one basis. What is actually available within NASA and of that, what is available to industry and academia. Let us know. Provide more on-site visits. Perform more public relations.

Avoid duplication with industry capabilities.

Removing politics between NASA centers.

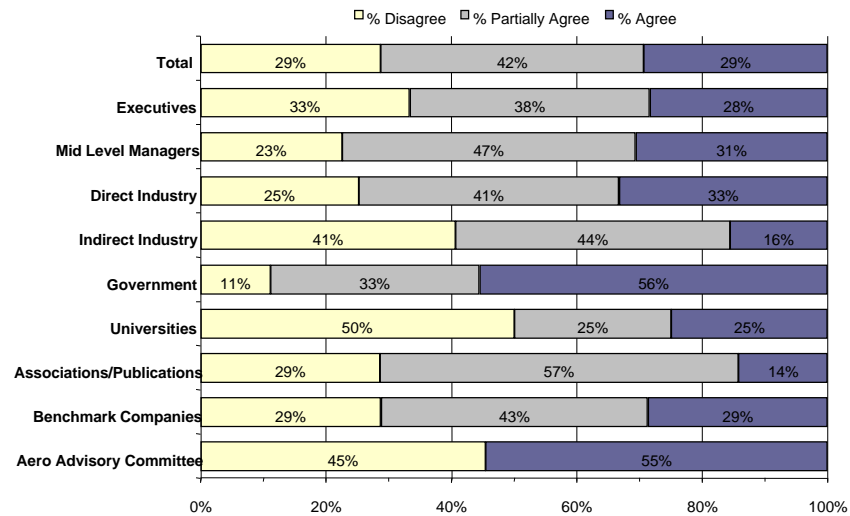
Customer and peer organizational planning and coordination.

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2.5 Resource Management

20. The ASTT program effectively balances fundamental (R&T base) research with its focused-program research.



- The responses to this question were varied.
- The Government most strongly agreed that the ASTT Program effectively balances fundamental research with focused-program research with the lowest “disagree” percentage of 11 percent.
- The AAC Members had no “partially agree” score and were almost equally split on “agree” at 55 percent and 45 percent “disagree”.
- Universities had the highest “disagree” score at 50 percent.

2. Survey Responses – Program Assessment

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2.5 Resource Management

20b. Should NASA pursue more fundamental research or more focused-program research, and why?

Many thought the balance was good as it is. However, good arguments for both fundamental and focused-program research were presented.

Executive Responses	Group
Balance now is quite good and should continue.	Direct Industry
Fundamental research, if fundamental research is done the focused program research will be done better.	
More focus-program because its more effective use of resources.	
More fundamental because that is NASA expertise and NASA's role.	
Need a balance, which they pretty well have now. Balance is needed because focused-program research is good for management, and fundamental allows innovative thinking.	
More fundamental research because it's their charter. Industry can't do fundamental due to high costs.	
More fundamental research because industry is not doing it. Industry is closer to end product at expense of base R&T. Lose generation of knowledge that short circuits everyone. NASA not required to make profit.	
More focused research, focused research pulls research along rather than pushing basic research.	
Fundamental research internally. Focused should be pursued through external contracting with industry. This is where the technology has to be transferred and will ultimately reside. The model is working well with the high-speed civil transport, except that more funds are needed to invest in the longer term program issues.	
More fundamental research. NASA must pursue this area because it very likely that industry will not. This may be the only area that industry will not actively pursue.	
[NASA] Should be looking at five to ten-year technology. University should be looking at ten to fifteen-year technology; Industry at two to five-year technology.	
Focused-program, i.e., NASA is the only one that can do environmental area.	
Focused-program research, NASA's role should be educational and inspirational and to do things industry can't afford.	
NASA is having a trend toward focus-based research. We should be careful not to lose the capability for fundamental research.	
Focused program research to become more efficient--pull research rather than push research	Indirect Industry
I feel that NASA should pursue more fundamental research. As part of a government agency I believe that this area is most appropriate.	
More fundamental research so as to not compete with industry.	

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More fundamental. I believe it's part of NASA's charter to do long range research. The companies are doing short range research. Its best for the country to have the long-term research and NASA supposed to be doing that.	
Fundamental research, too much emphasis on focused program research and without basic research can't do more applied work. Will see it in the future.	
More focused program research to get at the application areas that pay off for the commercial aviation user.	Universities
Both, but hard judgements should be made as it the real needs.	
Need much more fundamental research but still need a balance--need more aeronautics and stop sending so much funding to space station.	
Fundamental research, focused research is too short sighted. Discovery is based on serendipity.	
Focused off target because of no sound technical base. Should pursue more fundamental - industry focused.	
More fundamental research, because no one else will do it. We are very reliant on NASA to do this type of fundamental research.	
Fundamental. Industry is in better position to provide effects program, but industry needs a strong technology base, which NASA is in a better position to provide.	Associations
Focused-program; use universities for fundamentals.	
Mid-Level Manager Responses	
Problem isn't which one, the problem is they don't have enough money to do it all. If they can't do that they'll have to alternate. The way to do this is to have 25-50-year plans.	
More fundamental research, very little going on, most to major programs.	
More focused, useful products if it is focused.	
More fundamental, that's their charter.	
Focused program research is better to meet goals.	
Not more, they should support each other.	
More fundamental research, no one else does it except the Air Force.	
More fundamental research, industry better understands market need, leave focused programs to industry.	
No one else does it! NASA's job, USAF has backed away from fundamental as well. NASA needs to pick it up.	
More fundamental research provides foundation for all research	
More focused program research, because it offers more incentive for industry involvement that would lead to commercial products.	
Good balanced; because more focused on science practical aspects come from industry.	
Fundamental needs to be aligned with focused research.	
More fundamental research, the government shouldn't be defining products.	
Current balance is good.	

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I feel that NASA should pursue more fundamental research. Only organizations that don't have stake holders involved should undertake basic research. For profit organizations will not make this type of investment.

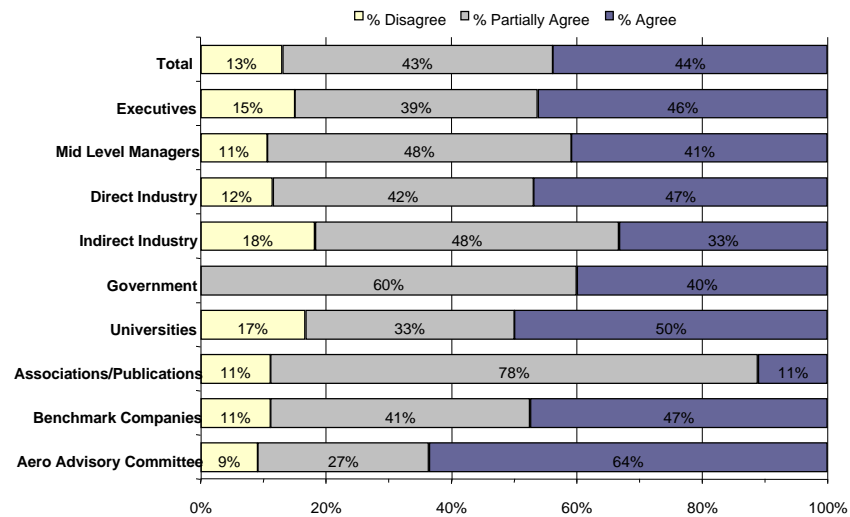
Focused program research, need to resolve noise more than to explore Venus. Focused products.

2. Survey Responses – Program Assessment

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2.5 Resource Management

21. The ASTT program effectively balances analytical, computational, ground-based experimental and flight research.



- The responses regarding the balance of analytical, computational, experimental and flight research generally followed the pattern of total with a few exceptions.
- Government had no “disagree” scores, whereas the rest of the groups ranged from 9 percent in the AAC Members, to 18 and 17 percent in Indirect Industry and Universities respectively.
- The AAC Members showed the most agreement at 64 percent.
- Associations/Publications the least “agree” scores at 11 percent, but with the 78 percent “partially agree” score exhibited general agreement.

2. Survey Responses – Program Assessment

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2.5 Resource Management

21b. Should NASA change its mix of analytical, computational, ground-based experimental and flight research, and why?

Overall most respondents felt the balance was good now, but the mix needs to be constantly scrutinized. There was some call for more flight testing.

Executive Responses	Group
No, overall. Have to be more selective in each of the areas to provide more effective technology transition.	Direct Industry
No, pretty well balanced as it is.	
No, plans are good, but funding issues negativity affects results. Better cooperative efforts with DOD are required	
Yes, not enough flight research for aeronautics, maintain ground-based experimental facilities.	
I don't think so. NASA needs to be very cautious. The current mix of analytical, computational, ground-based experimental, and flight research provides a good interaction. NASA needs to really create a strong bond with the FAA.	
Should be based on work statements, not on NASA centers.	
Yes, strengthen the prediction analytic area so we have to do less testing. They should do analytical work and validation of tools.	
More emphasis on flight research, more rapid progress.	
In general, they are pretty balanced, but caution is necessary on the flight research to make sure that the cost/benefits are scrutinized. A good example is the hyper-X program. Within this program the cost far out weighs any benefit that will come out of the program.	
It is good now.	
It's not the mix, it's the approach. This needs to be done in a systems approach. How do they find better mix, they need to get away from their micro-management approach by reorganizing to find a better way. The loss of funding has also affected how they do business.	
Integrate them better.	
Yes, there should be a change, and why, well the second word in NASA is aeronautics.	
Yes. Spend too much time doing paper studies and don't get to meat of whether their studies are valid or not. Too few people spread too thin, budget cut back too much.	
No, not for the foreseeable future. It's always changing. They should change as they have in the past.	
More flight research--learn by flying hardware.	
Not clear that they have enough funding to do much of one flight demonstration kinds of things that they are spending most of the resources on now.	Indirect Industry

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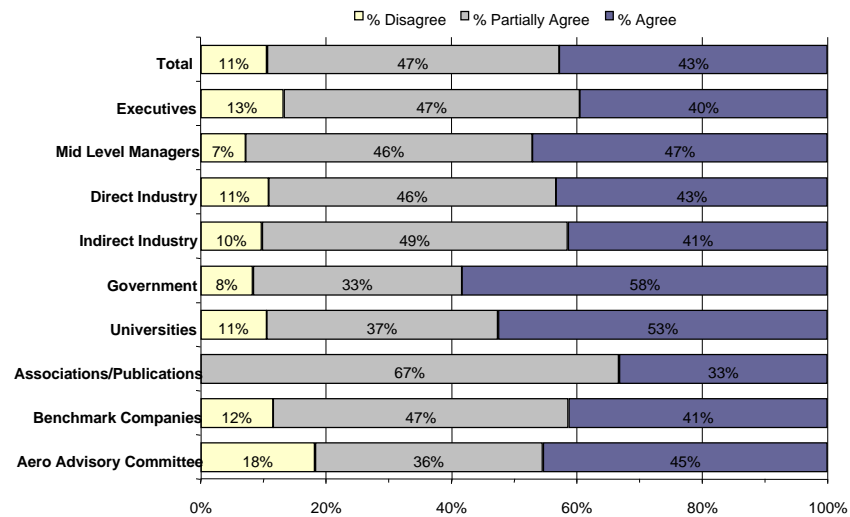
More system demonstrations.	
Yes, the change should be made so that technology transfer takes place faster. The only way you're going to do that is to shove more resources into segments of research that are targeted for the problem areas commercial aviation users have helped articulate, the message is--transfer technology faster.	Universities
No. Mix is OK.	
Understanding of fundamentals is missing.	
NASA needs to provide more support in the areas of computational and ground-based experimental research. NASA has fallen behind in these areas and needs to get back in these areas. They need to do more with the in-house and collaborative efforts with in-house and collaborative efforts with industry to achieve success in these areas.	
Maintain logical balance between them all.	Associations
Stay the same - let industry do specific application and demonstration.	
No, based on constraints of today's budgets, the current balance should be maintained.	
Analytical and flight research, above research is lacking.	
Mid-Level Manager Responses	
Need a couple of X-planes in near term. The reason is that we need a risk producing way to accelerate technology transfer.	
More base R&T research to provide continuation of innovative technologies, transition of focused technology.	
More analytical research, demonstrations are expensive, need the underlying understanding first.	
No, if it isn't broke don't fix it.	
Not the mix just the amount overall. Bigger pie not change the slices.	
Industry should do flight research. More analytical and computational.	
Yes, ignoring areas of successful programs. Look at more areas, not just theory, but applications.	
More computational programs need test articles at end to anchor those computational programs	
Yes, more flight research.	
On space side more ground base and analytical.	
More ground-based experimental, to assure cost-effectiveness, to collect fatigue/fractures and life data which can't be acquired in flight-testing.	
More flight research-flight proves the technology and gets you to the product faster.	
The mix is fine and doesn't need to be changed.	
None- leave it alone.	
NASA shouldn't change the formula that they use today. The mix is OK because it seems to respond to the needs of the research they are doing.	

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22. The ASTT engineers and scientists play a key role in the development of innovative or enhanced technical solutions.



- The responses to this question show overwhelming “partial agree” and “agree”.
- Associations/Publications report no “disagree” responses yet their “agree” rating is the lowest at 33 percent.
- The highest rating of “disagree” come from the AAC Members at 18 percent.
- The highest “agree” responses are from Government and Universities.

2. Survey Responses – Program Assessment

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2.5 Resource Management

22b. In what areas have NASA engineers & scientists played a key role?

Respondents stated space travel and exploration contributions to many areas of technology are NASA key roles.

Executive Responses	Group
Human factors, structure, propulsion and computational fluid dynamics.	Direct Industry
Space travel is the biggest.	
Cockpit technology.	
Atmospheric physics, earth physical science.	
Aeronautics, space transport, earth science, and weather.	
Years ago played key role in both aeronautics and space. Not in past five years.	
Development of high performance rocket propulsion.	
Fundamental technology application.	
Lifting body-ceramic and metallic thermal protection systems - supercritical wing-coke-bottle design of aircraft.	
Determining where research dollars will be applied in industry.	
Composite technology, computer fluid analytical (CFA) tools, and noise research.	Indirect Industry
In the area of basic research.	
Thermal protection some extent in flight control technology, icing research and basic aerodynamics.	
In rotorcraft: initial devilmint of tiltrotor, noise reduction and computer codes.	
CFD, fundamental rotor research, tiltrotor development, advanced propulsion, aero-acoustics research, and wind tunnel testing.	
High-speed research-wind tunnels, thermal barrier coatings, hypersonic re-entry research, tribology-function and wear.	
Understanding flight dynamics, environmental issues, space travel, high-speed travel.	Universities
Friction, deicing, more efficient wings, wind shear.	
Propulsion, structures, engine efficiency.	
Interplanetary exploration.	
There is a lot of good guidance from NASA in the X-33 and X-34 in terms of experimental aircraft.	Universities
Engine developments, applications of avionics to handling qualities & control, application of advanced composite materials to structures, vectored thrust.	

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Atmospheric modeling, measurement from satellites, and high-speed propulsion research.	
In the area of mission studies, and developing space platforms.	
Wake vortex at Langley, CTAS at Ames, human factors at Ames, aging aircraft at Langley.	
Provide technical assistance of general aviation, which is technology through AGATE and general aviation propulsion system through GAP. Also key role for inspiring aviation safety and providing scenarios for ATM and ATC architecture.	Associations
Supercritical wing and use of thrust as aero control.	
Advanced aircraft design and flight dynamics.	
In our area--GA, identify areas of human factor improvement as it affects aviation safety.	
Improving awareness of rotorcraft basic aerodynamic principles. Developing/pursuing advanced rotorcraft research technology programs.	
Mid-Level Manager Responses	
Historically in the space program. Development of computational labs and facilities in research facilities and promotion of high-risk/high-payoff concepts.	
Engine noise predictions. Noise test planning.	
High temperature materials, new composites, new metal alloys.	
Advanced composite wing program.	
Aeronautics, space, computational sciences.	
HSR.	
Development of basic design tool methodology. Computational and experimental methods.	
Materials, science, aeronautical computational methods, environmental, human factors and systems in cockpit	
Material development, propulsion, aerodynamics.	
The NASA engineers and scientists have played a key role in the field of optical and mechanical, especially in the area of experimental development.	
Flight simulation/test.	
Development of concept of ideas in noise area.	
HASCT area. Number of space applications include launch vehicles in last five years	
Reduce noise and emissions. Promoting UNBP.	

2. Survey Responses – Program Assessment

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2.5 Resource Management

22c. In what area have they not played a key role?

Answers to the question tended to be based on the particular interest of the respondents and their company's and products.

Executive Responses	Group
They've tried to play a role in systems integration but unsuccessfully.	Direct Industry
Solution of critical operational issues.	
Rotorcraft, general aviation.	
Facility technology.	
General aviation and airline safety.	
In the area of civil aviation cockpit design.	
Joint ventures and intergovernmental cooperation.	
General aviation fuels, petro-chemical fuels.	
Judgement, on the basis of economic realities, is not very good.	
In the area of applications to commercial products.	
Integration of advanced design tools.	
Systems and software engineering, and methods in developing active systems, and unmanned vehicles.	
NASA needs to do more in the area of systems integration. Systems integration brings the whole thing together. They seem to have only done bits and pieces. They have done a good job on the space shuttle but nothing with respect to an all-weather flight capability.	
Validation of computational codes. Too much emphasis on super computers--not enough on work stations and networks of workstations.	
Innovation. Haven't seen anything novel discovered. More evolution of what they are doing. Industry responsible, wants to develop products at NASA's expense.	
Airplane maintenance; aging aircraft.	
Especially in the area of avionics systems development. Another affected area is material and structural technology. They also lack involvement in the product definition process by which we use graphics and computational technology to develop a new air vehicle. NASA can develop this leading-edge type of technology so that the FAA can employ it to perform its fundamentals. Every time NASA starts to get involved, they are chased away by the OMB.	

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Aeronautical design, tools for control and stability analysis and simulation, high life fundamental databases for modern attack aircraft (military).	
Materials and composites research.	Indirect Customer
Human factors, safety, manufacturing technology.	
In recent years, I think that they have not played as an important role in addressing slow speed aerodynamics. The guys in gear are the FAA and they seem to be doing much better research. They show a lot more motivation. Actually with the right type of competition, and the FAA types competing, NASA could cause work to be done in the area of slow speed aerodynamics.	
Aviation safety and capacity (ATM).	
Develop cost-effective launch services.	
Have not achieved leadership in information technology; for example: redundant/fault tolerant information systems work at Langley.	Universities
In the area of fundamental science. We need to use material resources more effectively. Perhaps resource recovery is necessary to further space exploration.	
Emphasis on revolutionary rather than evolutionary has resulted in poorly focussed programs, hypersonics is a good example, also space research, GA and hypersonics.	
Aviation safety, have not gotten to the heart of that problem.	
Maybe in some of the fundamental physics across the board. A lot came out of university work, then they have taken it and gone forward with it. But the basic ideas have come out of universities.	
My impression is that in the safety arena NASA does not play as key a role as FAA. For emissions and noise, the companies do more.	
Reducing the cost of bring advanced technology to market and reducing the time to certification of key technology. Tried but don't think successfully.	Associations
In identifying ways to reduce cost of flying, haven't seen progress on this yet.	
Mid-Level Manager Responses	
Sometimes they don't understand constraints. For example, of airframe manufacturers and their customers in implementing technology.	
Once technology transitioned, no role in application, should input at least.	
Efficient technical transfer to industry.	
Manufacturing technology, aircraft systems (mechanical and electrical systems).	
Manufacturing, airframe mechanical system (like air conditioning, landing gear).	
National leadership in computation too fragmented to realize opportunity.	
Advanced technology for high performance rocket engines, high temperature turbines.	
Technology development, R&D, product development.	
Noise reduction concepts.	

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Safety, affordability, general aviation.

System integration.

Design and production of hardware.

Systems, economic benefits. Always looking at partial solution.

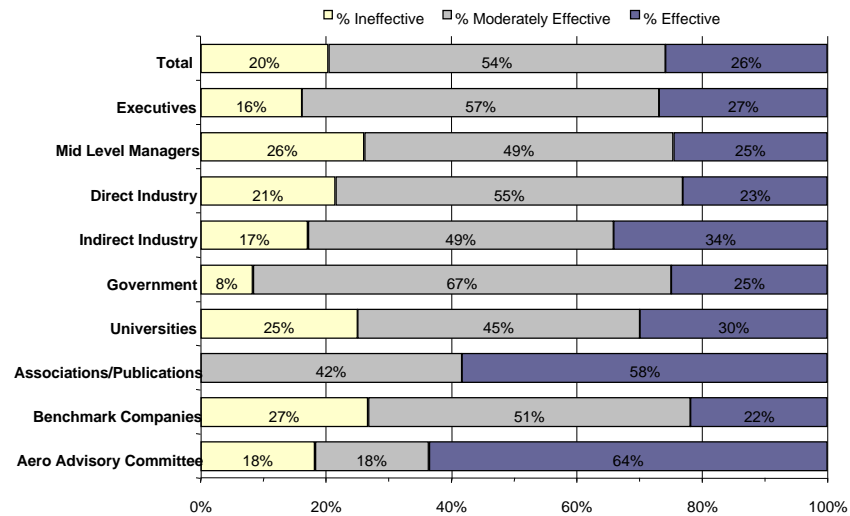
Nothing as far as I can see.

2. Survey Responses – Program Assessment

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2.6 Contribution to National Needs

23. How effective is NASA's ASTT program in performing fundamental research?



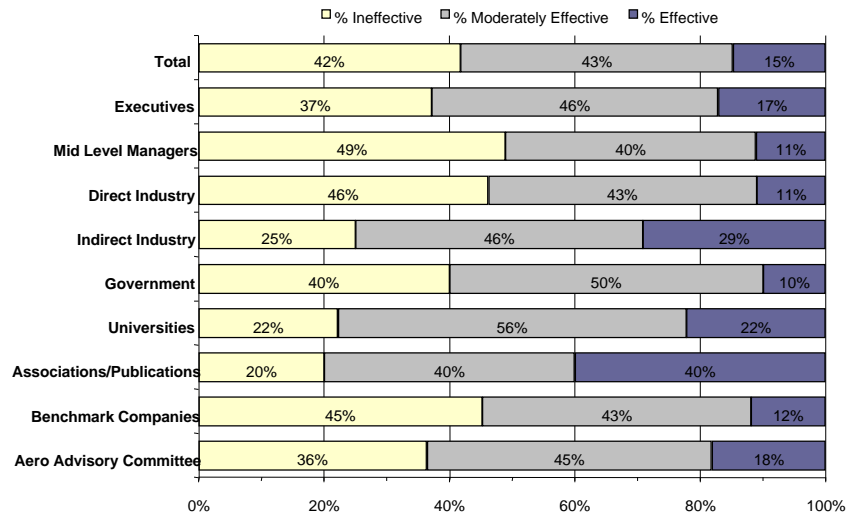
- The responses show general agreement that NASA is effective in performing fundamental research, but the majority of scores are “moderately effective” responses.
- Associations/Publications report no “ineffective” responses and the highest “effective” responses at 58 percent.
- The highest “ineffective” scores are from Benchmark Companies at 27 percent and Mid-Level Managers at 26 percent.
- The AAC Members’ responses were the highest “effective” score at 64 percent significantly higher than the total response of “effective” at 26 percent.

2. Survey Responses – Program Assessment

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2.6 Contribution to National Needs

24. How effective is NASA's ASTT Program in improving national security?



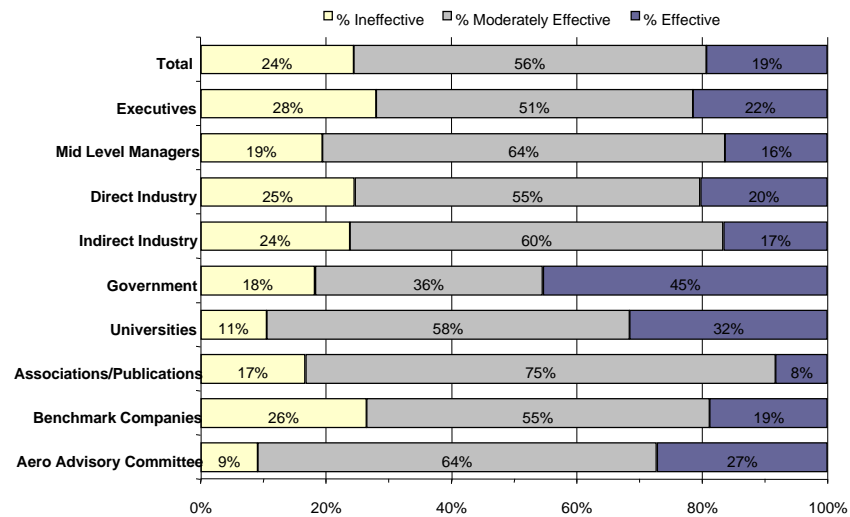
- Most groups showed high “ineffective” response to this question reflecting the total response of “ineffective” of 42 percent.
- The highest “ineffective” scores were from Mid-Level Managers at 49 percent, Direct Industry at 46 percent and Benchmark Companies at 45 percent.
- The highest “effective” rating came from Associations/Publications at 40 percent, followed by Indirect Industry at 29 percent.
- The remaining “effective” scores were between 10 percent and 22 percent.

2. Survey Responses – Program Assessment

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2.6 Contribution to National Needs

25. How effective is NASA's ASTT Program in developing/transferring technologies for economic



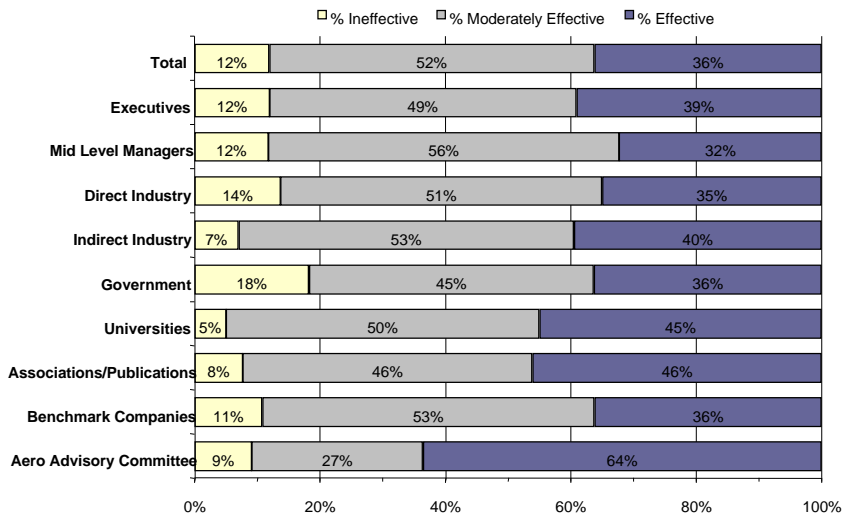
- Government and Universities gave the highest “effective” responses at 45 percent and 32 percent respectively.
- Executives and Benchmark Companies, Direct and Indirect Industry provided the highest “ineffective” scores.
- The majority of scores were in the “moderately effective” response.

2. Survey Responses – Program Assessment

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2.6 Contribution to National Needs

26. How effective is NASA's ASTT Program in maintaining superiority of US aircraft and engines?



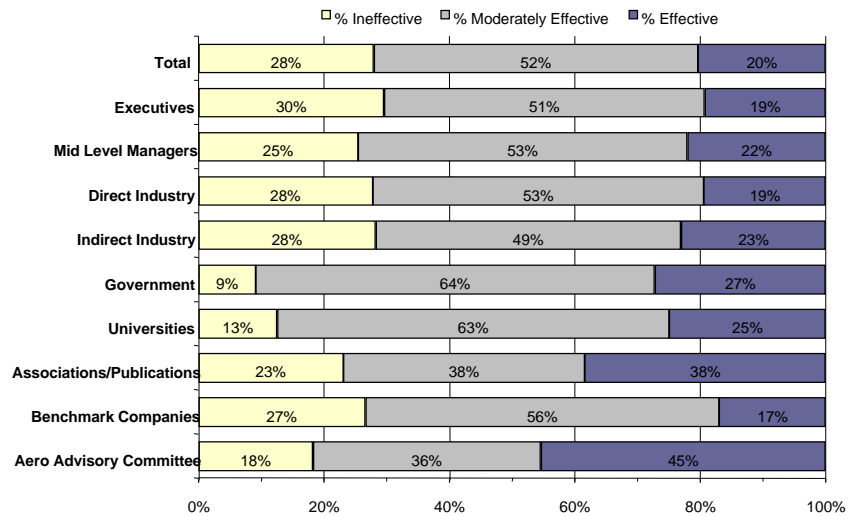
- Combined scores of “moderately effective” and “effective” showed general agreement to this question.
- Most groups reflected the scoring of the total group.
- Indirect Industry and Universities had the lowest “ineffective” responses at 7 percent and 5 percent respectively, with the Government the highest “ineffective” score at 18 percent.
- The highest “effective” scores were from the AAC Members at 64 percent.

2. Survey Responses – Program Assessment

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2.6 Contribution to National Needs

27. How effective is NASA's ASTT Program in developing a superior, affordable, global air transportation system?



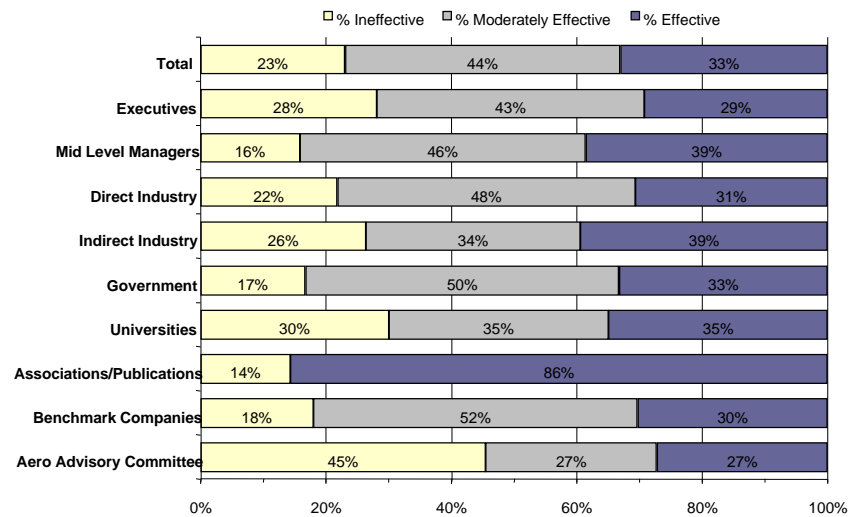
- The responses of Executives, Mid-Level Managers, Direct Industry, Indirect Industry and Benchmark Companies reflect the responses of the total.
- Government and Universities combined responses of “moderately effective” and “effective”, 91 percent and 88 percent respectively, are the overall highest scores.
- The AAC Members gave the highest “effective” score of 45 percent, followed by Associations/Publications at 38 percent, while the other “effective” scores ranged from a low of 17 Percent for Benchmark Companies to 25 percent for Government.

2. Survey Responses – Program Assessment

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2.6 Contribution to National Needs

28. How effective is NASA's ASTT Program in developing superior, affordable, space launch systems?



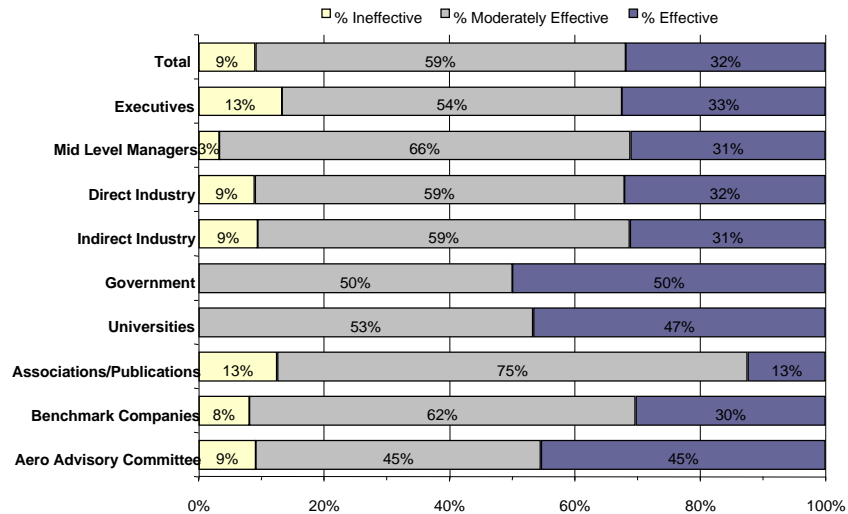
- The range of “effective” scores for all groups except Association/Publications was from a low of 27 percent to a high of 39 percent for both Mid-Level Managers and Indirect Industry.
- Associations/Publications gave an “effective” score of 86 percent. There were no “moderately effective” scores for this group.
- The highest “ineffective” scores were from the AAC Members at 45 percent, followed by Universities at 30 percent and Executives at 28 percent.

2. Survey Responses – Program Assessment

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2.6 Contribution to National Needs

29. How effective is NASA's ASTT Program in ensuring long-term environmental compatibility of aerospace systems?



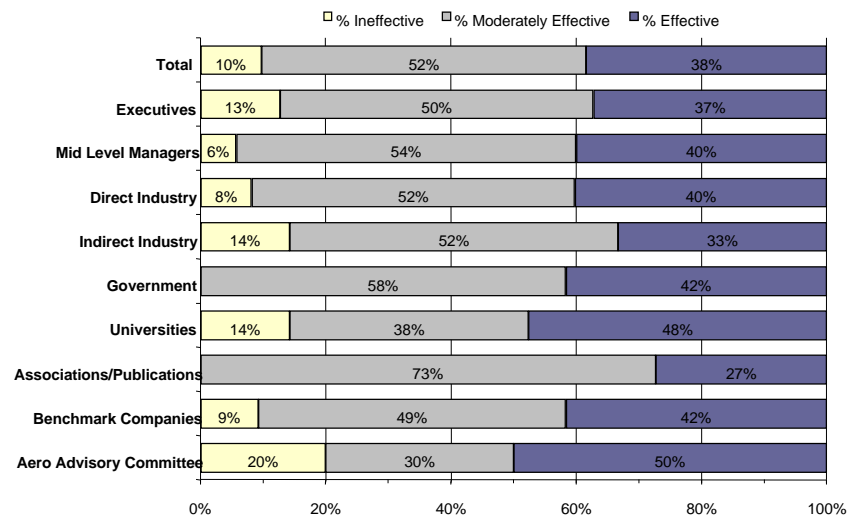
- Combined totals of “moderately effective” and “effective” for all groups were very high. However, the majority of responses were in the “moderately effective” range.
- Government and Universities gave no “ineffective” scores, with their “effective” and “moderately effective” responses evenly split, Government at 50 percent each and Universities at 47 percent “effective” and 53 percent “moderately effective”.
- The highest “ineffective” scores were from Executives and Associations/Publications at 13 percent each.
- Associations/Publications also gave the lowest “effective” score at 13 percent, much lower than the next lowest of 30 percent.

2. Survey Responses – Program Assessment

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2.6 Contribution to National Needs

30. How effective is NASA's ASTT Program in making partnerships with government, industry, and universities?



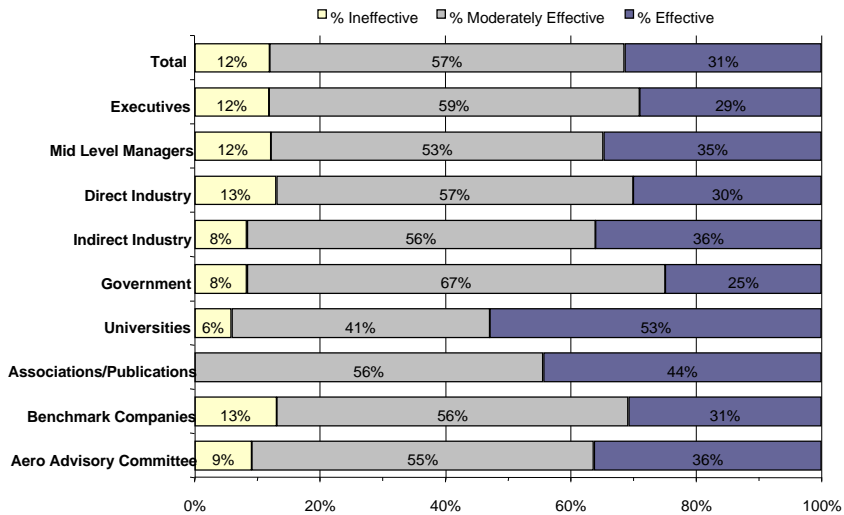
- The majority of responses were in the “moderately effective” range.
- The highest “ineffective” score was from AAC Members at 20 percent, but also gave the highest “effective” score of 50 percent.
- Associations/Publications gave no “ineffective” responses, but had the highest “moderately effective” score.

2. Survey Responses – Program Assessment

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2.6 Contribution to National Needs

31. How effective is the overall ASTT contribution to US R&D needs?



- The majority of responses were in the “moderately effective” range, however “ineffective” responses were very low.
- Universities gave the highest “effective” score of 53 percent.
- Associations/Publications provided no “ineffective” scores.

2. Survey Responses – Program Assessment

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2.6 Contribution to National Needs

31b What can ATT do to increase its overall effectiveness in contributing to US R&D needs?

More fundamental research, funding, and working more closely with customers and universities were the themes to these responses.

Executive Responses	Group
More stable, longer term programs, more emphasis on validation.	Direct Industry
Decrease percent of work in house and support outside proposals more.	
Do more research, stop building the space station. Huge money sink and would be better directed to the ASTT program.	
NASA needs to implement in a timelier manner the suggestions it receives from industry. Their institutional problems prevent this action. It's very difficult and being timely is a huge issue. Unfortunately, the NASA organization does not support this action.	
Focus more on advanced technologies including application of advanced information technologies.	
NASA needs to excel in the use of critical research and development methods with both industry and other branches of the government, especially the DOD and FAA.	
NASA needs to get it act together with all the changes in the administrations. Establish a set of goals and stick with them. Don't always change them. Ask what industry needs. Don't do what NASA wants to do. Need to set goals with universities and industry on what should be advanced.	
I think NASA ASTT aeronautics need strong vision and leadership to aggressively develop and manage their programs. Need to change with changing needs of industry. They have great difficulty in doing that, difficulty in understanding industry's competitive needs and therefore have inability to change. All comes down to leadership at the top.	
More funding in critical technology areas.	
Invest more in the R&T base areas. Shift-support from the service contractors to university research and strengthen these programs.	
Maintain a high level of communication in trying to understand industry's needs.	
They, with industry, have to pursue greater funding to properly balance space and aeronautics.	
By establishing joint programs with industry as the systems integrator and NASA developing identified advanced technology components.	
Do more fundamental work, foundational research.	

2. Survey Responses – Program Assessment

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Perform better market research to validate the need for the research.	Indirect Industry
Within NASA there is a need for additional communications and awareness of the programs and services that are available. We in industry need to know what we have access to and what the procedure is to gain access to that service.	
Better consultation with industry in the early stages of research planning.	
Provide more understanding of what they are doing. More awareness.	
In space area I think they could focus on system approach to lowering cost to overall access to space using existing fundamental technology. Tend to go to very sophisticated solution to lowering costs that are system solution. Need to look at all aspects of costs if want to reach their schedule.	
Has to have a better understanding of how technology gets on products and a willingness and ability to make changes to assure that technology gets an aircraft sooner. They need an aeronautics policy that matches the new industry structure.	
Increase an emphasis on basic and long-term research and increase funding in that area. Look at long-term rather than short term.	Universities
Think human resource issue ensures that we have a good base of scientists and engineers to do the work.	
Make stronger cases with Congress about the imperative of reducing technological risk for our industry.	
Make more funding available for basic research that is not aimed at meeting a product.	
Not lose emphasis on fundamental science.	
Dramatically improve the university/government/industry interaction at all levels.	
Work closer with universities and industry. Leave focussed programs to industry.	
NASA needs to compare its goals with the strategy it uses to achieve these goals. They probably need to be updated and more flexible. NASA needs not to get stuck in its planning. NASA needs to show an alertness to explore new technology trends and bridge the gap in our basic scientific knowledge.	
Focus on bringing products that aviation community can use to community faster. May be computer code or basic technology "classic NASA products" not necessarily a physical product that you can buy in a store.	Associations
More money.	
Fine tune application of technology to specific programs--reorganize use of resources (concentrate human factors activities on specific programs).	
Help identify specific needs and then provide attainable ways of meeting those needs through NASA's scientific capabilities.	
Mid-Level Manager Responses	
Continue to pursue focused approach as defined by the three pillars.	
Continue looking at business-based metrics. Watch US competitive needs.	
More funding towards innovative system for space entry.	

2. Survey Responses – Program Assessment

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More collaboration with industry through contracts and cooperation agreement

Spend more money in lesser areas. High-risk equals high payoff.

More visits to industry, universities, and more public relation with the aircraft industry, and product associates. NASA needs to be more involved in safety.

NASA needs to communicate on what they are doing better to government, industry, and academia. The survey is important. They need to listen to industry.

Refocus and add applications to military side of equation.

Provide useful product from research.

More civil aviation and fundamental research.

Consider research sharing and joint programs with Europeans and Asian community.

Align goals that market and regulatory require. Stable long-term funding strategy. Tie headquarters staff closer to programs at NASA centers.

They could do more to facilitate joint international programs other than space.

Focus more heavily on economic side of equation.

Stay focused on technologies that US is currently pursuing, not weird-out-there stuff.

Increase funding in Global Pillar and decrease funding in revolutionary leaps.

Disseminate information. No more cooperative syndrome, let industry lead communication, in-house opening up.

More funding.

Listen to industry--all input from industry.

More partnering with industry, more upfront participation with industry, more feedback when plans are developed. Willingness to terminate R&D based on industry input.

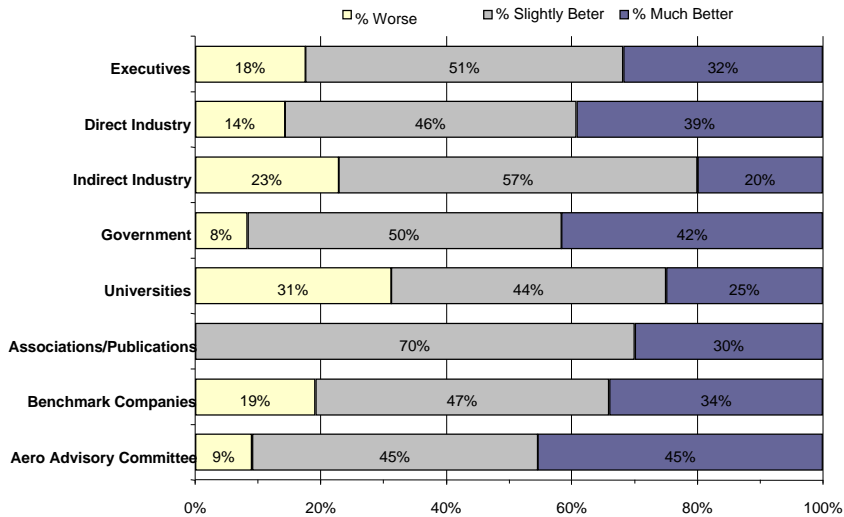
Go back to their roots!

2. Survey Responses – Program Assessment

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2.7 Closing Questions – Executive Level Only

32. Has NASA's planning worsened or improved over the last few years?



- The responses as to whether NASA has improved over the last few years were mixed.
- AAC Members, Government, and Direct Industry gave the highest “better” scores of 45 percent, 42 percent, and 39 percent respectively.
- The highest “worse” scores came from Universities at 31 percent and Indirect Industry at 23 percent.
- Associations/Publications gave no “worse” scores, but their “same” score was 70 percent.
- 82 percent of Executives indicated that program planning was “slightly better” or “much better.” This compares with 66 percent in 1995 and 47 percent in 1992. 32 percent of Executives indicated that program planning was much better. This is similar to the 31 percent rating in 1995.

2. Survey Responses – Program Assessment

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2.7 Closing Questions – Executive Level Only

32b. What can NASA do to improve its planning?

The respondents felt that better budgeting and more communication and interaction with customers would improve planning.

Executive Responses	Group
Provide a forum that goes beyond workshops and actual set-up of programs--smaller group of key industry participation to boil down ideas into programs. Do more feasibility studies with industry before launching a program.	Direct Industry
Work with Congressional interactions, work more with industry to do allow industry to succeed by themselves. Reduce inefficient meetings and workshops by utilizing information and technology, i.e., "net" meetings.	
Be more responsive to industry needs, not so much planning, as it is attitude.	
Need to communicate what they are doing better to Advisory Committee.	
More planning in cooperation with DOD elements in aeronautics and space	
Better execution of plans.	
NASA should disregard its basic planning. The recent erosion of the US leadership role in aerospace and our inability to deal with the pitfalls of our routine planning for manned space exploration has created a significant dilemma. NASA needs to improve its partnership with the Armed Forces (Navy, Army, Air Force) to improve aeronautical technology and provide an improved research and development road map. The same thing is true for the FAA in technology and propulsion. NASA needs to get ownership out of the White House, OST, and OMB and keep their involvement at the planning process level.	
More industry involvement with key technology implementers.	
Through better communications, such as publishing results.	
More communication with industry.	
Better planning/advocacy for aeronautics at the White House	
NASA needs to put the "A" back into NASA. They also need to make a total investment in strategic and tactical planning. Focus on area that will be effective in a number of areas, like, microgravity and life sciences. The ASTT tactical planning is outstanding. The space program seems to be satisfactory, but overall there are very few happy people with what the program provides. Is it a real effective use of our resources? I think not.	
Match planning to budget. Avoid stop and starts in programs due to budget fluctuations.	
Work closer with industry, universities, and other government agencies, USN, USAF.	
Maintain commitments once established.	
Vision and proactive to look into the future. To be the driver rather than driven. To be active rather than reactive.	

2. Survey Responses – Program Assessment

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Planning is unrealistic. Realistic planning with respect to budget is needed. Do fewer programs well.	
Focus on solving HARD problems and less on sales hype.	
Nothing, most things affecting plans are beyond their control.	
Delivery and implementation lacking, talk good but follow through not good.	
Stop staff cutbacks and become more efficient in the use of people.	Indirect Industry
Survey industry to find out what potential customers are looking for.	
Early end-user involvement.	
Communication and feedback.	
Get more technically qualified people involved in planning and refocus on long-term versus short-term planning or at least a better balance.	Universities
Exert budgetary discipline, which puts aside money for the unexpected and very promising research ideas, i.e., provide flexibility in the longer range plans.	
Have fewer groups working on a plan before making a decision, fewer meetings and workshops.	
Realism in time required for scientific advancements.	
Be less political. Be more separated from large industry.	
Narrow focus, be excellent at fewer things.	
Return to fundamentals.	
Commitment to planned programs. Come out of vacuum!	
NASA needs to pay more attention to its customers. They also need to make a move to check who its customer base really is. They need to get feedback from a variety of different organizations, like that AIAA, and through workshops and committees. Each of these needs to be seriously supported by NASA. NASA needs to set priorities in establishing these groups so that they are useful.	
Communicate with customers "true partnership".	Associations
Better program definition and cost analysis.	
More involvement of industry, better coordination with FAA.	
Use advisory committees better. Pay more attention to staffing these committees. Get people who will really work rather than just meet.	
Need to update its understanding of new industry structure and what it means for an appropriate government role for aeronautics.	
Reinvigorate subcommittee arrangements to bring in universities.	

2. Survey Responses – Program Assessment

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2.7 Closing Questions – Executive Level Only

33. Have you participated in a previous NASA Aero Survey?

- 21 Executive Level respondents (out of a total of 101) participated in the 1992 survey.
- 35 Executive Level respondents participated in the 1995 survey.
- 13 Executive Level respondents participated in both of the prior surveys.
- Respondents who had participated in either or both of the prior surveys were asked two additional questions:

If you participated in the 1992 and/or the 1995 survey, did the results of the survey in any way change your organization's relationship with NASA? If so How? (Question 33b)

Compared to previous NASA Aero Surveys (1992 and 1995), how would you rate this one? (Question 34)

2. Survey Responses – Program Assessment

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2.7 Closing Questions – Executive Level Only

33b. If you participated in the 1992 and/or the 1995 survey, did the results of the survey in any way change your organization's relationship with NASA? If so, how?

Of those who participated in the previous survey the responses were mixed concerning change of relationship with NASA.

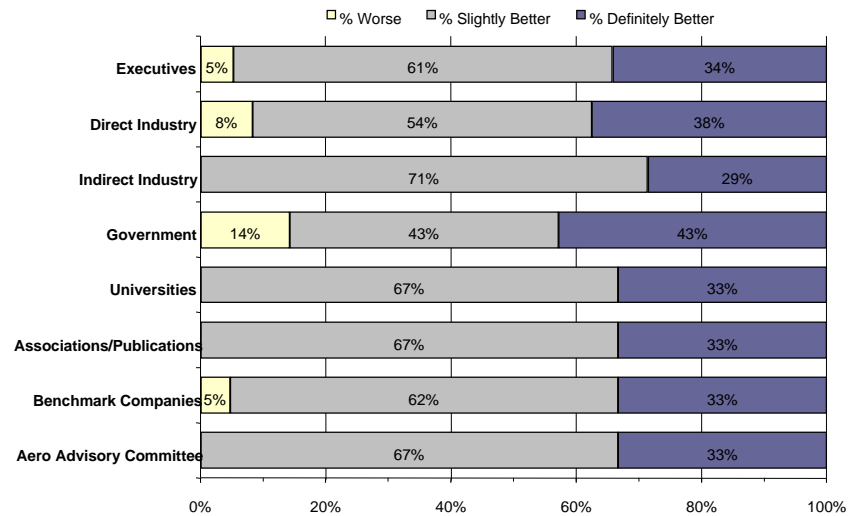
Executive Responses	Group
Yes, between 92 and 95 industry became more involved in planning through workshops.	Direct Industry
Yes, help put more relevancy in NASA which lead to Pillars and Goals plan.	
Yes, increased efforts in joint industry/NASA planning.	
Not to my knowledge. It made a few companies aware that NASA cared and it actually improved NASA's image.	
Did not.	
No apparent impact, however, NASA should be praised for attempt.	
I don't know, we have always had a good relationship with NASA. NASA probably needs to involve industry more. As an example, we have been invited to provide comments on all program changes that we are involved in.	
I think we have been asked to participate more in NASA's planning.	
Yes, more involvement with NASA collaboration. No more involvement with headquarters.	
I'm not aware of the results having any effect. No feedback. I haven't had any feedback, but can see a difference in how they behave and react.	
I don't think that the survey did. Our organization was moving closer to NASA on its own. The survey was an enabler that helped	
Created an awareness of the advantages of working with NASA.	
Yes, became closer with NASA's planning.	
Well, our organization ended up interfacing with NASA on computational program, which is one of the major computation program in the previous 6-8 years. There was interaction in areas of acoustics, which lead to further work basic research for rotorcraft acoustics.	
No, don't know if every saw results of survey.	
Yes - NASA listened.	Associations

2. Survey Responses – Program Assessment

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2.7 Closing Questions – Executive Level Only

34. Compared to previous NASA Aero Surveys (1992 and 1995), how would you rate this one?



- Scores were very similar among all groups, with minor differences.
- Universities, Associations/Publications and the AAC Members all gave no “worse” responses.
- Universities, Associations/Publications, Benchmark Companies, and AAC Members all gave a 33 percent rate to “definitely better”, while Executives gave a 34 percent rating.
- Government gave both the highest “definitely better” score at 43 percent and the highest “worse” score at 14 percent. Only three other groups gave a “worse” score, Direct Industry at 8 percent, and Executives and Benchmark Companies both at 5 percent.

2. Survey Responses – Program Assessment

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2.7 Closing Questions – Executive Level Only

34b. How can future surveys be improved?

Many wanted more information before taking survey, more open-ended questions, and to know the results.

Executive Responses	Group
Offer opportunity to get into specifics in different areas of ASTT.	Direct Industry
Ask some open-ended questions, on critical concepts. Title of goals right, metrics wrong. Implied that if industry was following goals then everything is all right but no way to convey metrics and considering behavior motivated by metrics.	
Have Pillars and Goals ahead of time.	
Future surveys would be more valuable if there were demonstrated reaction to earlier ones. Inform participants of action taken.	
Need more questions on how NASA measures their effectiveness against customer need.	
I do like the support and balances of this survey, also the tolerance and patience of the interviewer. Maybe if a little insight is provided before the survey is conducted, but I'm really happy with this one. The technique provides a good balance of open-ended, scaled, and yes/no questions.	
My concern is that we first need to decide what NASA's role is, then decide what question to ask. Only want to ask question you want feedback on. If you want to change something don't need survey. It's a matter of whose steering, is the industry or the government steering. That's my concern. The surveys are more for process's sake but are overruled by CEO interface, and CEO's are selected.	
This one was fairly good, but I wasn't always clear on what the question was asking. Need more clarification on what a specific question means.	
Better idea of what survey is about.	
The survey is not the issue. Feedback and specific steps taken as a result of the current survey. As an example, what has the survey done? What new initiatives are results of the survey.	
For future surveys I don't think there is much you can do. You ask the right questions. Maybe there is a way to ferret out the answers. You may need to piece together a list of industries and address their concerns. What are these company's needs? Probably a few weeks before the survey provide a list of fundamental areas that will be discussed.	
Again, use the results of the ASTTAC Committee. NASA needs a lengthy review of this committee work. There are good comments here that need to be acted upon. There should be no qualification issues and nothing on individual programs.	
Should be less structure. Cannot discuss if not in questions.	

2. Survey Responses – Program Assessment

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Just through familiarity, better if working within program. Nothing wrong with survey.	
I think that maybe a few more open-ended responses would add to the survey itself. I also feel that you need to provide more explanations of the specific issues that are contained in the survey.	
Survey well done, it can't be improved.	
Feedback to interviewing, more open-ended responses.	
Too broad for agency, needs to pin down site, i.e., some areas of NASA are excellent others not. Can't pin this down with current survey format.	
This survey had more to do with NASA processes, and the previous survey had more to do with describing the environment NASA found its self in. Need more questions on how NASA is interacting with other agencies, industry, and constituent groups.	
Compare the results with the stakeholders and tailor it to them. Involve the direct and cooperative users.	
By dividing them into specific areas, such as: global civil aviation, space transportation, etc. Don't lump all into one.	
They are adequate, a lot of questions but need for database.	
More open-ended questions-dialogue.	
One thing that might improve the survey is either a video or CD that explains what the survey is and what it is looking for. It would start people thinking right off the bat.	Indirect Industry
A great deal of customer specificity is in the NASA programs. That is the ones that are directly applicable to our industry. To improve the survey, it depends on what NASA is trying to measure and whom they are trying to reach. With regard to this survey, they may be asking the wrong questions. The cooperative effort on this survey was very well done. The planning, set, and execution were handled in a very professional manner. SAIC's personnel assignment for conducting the survey was extremely well matched.	
Focus survey to pillar involvement of the interviewee.	
Continue the in-person interviews.	
Describe what more the program is about what are the programs you are trying to survey for someone who does not work with NASA on a day-to-day basis.	
By seeking attribution to technical areas it will provide feedback information that is more specific and tuned to problem areas.	Universities
Need first of all to designate which organization your talking about so that you can correlate resources. Categorize categories and compare by category. Scale questions difficult to get since of how well NASA is doing on average. Need more open questions. Have to factor in what organization is giving information.	
Have a pre-survey, which gets input from those to be surveyed as to what questions to be asked.	
Target constituents (groups) and tailor surveys.	
Make sure participants receive the results with sufficient attention so not perceived as just another piece of paper. People involved in survey need some feedback so participant encouraged to read and remember.	Associations
Make it shorter.	

2. Survey Responses – Program Assessment

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Emphasize more narrative questions and answers, "There are techniques to analyze narrative answers."	
Give a little bit of additional advance knowledge of scope of survey. Focusing toward specific products and programs of stakeholders.	

2. Survey Responses – Program Assessment

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2.7 Closing Questions – Executive Level Only

35. For the next survey, what new question(s) should be asked?

There are a wide range of suggested questions, but respondents were interested in rating NASA's performance and follow through, and being involved in future NASA plans and strategies.

Executive Responses	Group
Specific questions within the mission areas—a two-level questionnaire.	Direct Industry
What changes would you make to improve NASA effectiveness in achieving its mission? What diverts or interferes with NASA being effective?	
How well have we responded?	
Break into space and aeronautical segments.	
Are NASA's expenditures properly balanced between programs?	
Some questions between space and aeronautics.	
More questions aimed at university programs, training, and engineers.	
I guess questions that try to gain the insight into people's criticism and whether or not they have been fixed. They need to be balanced in both strength and weakness.	
I think it should be the mix, how much R&T and how much focus. And, establish the role NASA should have.	
None- change the yes/no questions to 1-10 ratings.	
There needs to be more that relates to NASA's overall strategic investment portfolio. Show how these are broken up and where they apply.	
Questions related to knowledge of NASA programs.	
Ahead of time you should get the name of an individual with the company who will respond to the survey. Compile the individual the individual's background relating to industry, academics, and educational level. This way you'll get a real feel for what industry concerns are from an individual perspective. This would provide a national goal based on pride.	
Shorten the survey process.	
Rate performance of different NASA levels: Center, HQ Staff, and Administration	
A lot of the questions from this survey are the right ones. Maybe some about how we are doing on the implementation of the recommendations would improve and smooth the survey effort. Kind of the "big stick" approach.	
Pretty complete. Presupposes that interviewee knows the breakdown of the budget.	

2. Survey Responses – Program Assessment

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What can industry do to help NASA?	
The survey questions need to include more on the specific programs as part of the survey. These specific questions should lead to a specific conclusion within the question/survey.	
Same questions, but open-ended questions and concern for US competitiveness. Importance of question should be rated.	
What new initiative should be within the ASTT program?	
Has NASA demonstrated to you that they have achieved their goals and executed their plans successfully? Have we documented and transferred our work to your industry? Have we reduced costs and red tape with respect to your involvement with NASA? Have we reduced costs and red tape with respect to your involvement with NASA? Have we simplified doing business with NASA? If so, how?	
Splitting some questions out a little bit to identify specific areas to comment on.	
What would the people being surveyed think are the measures of performance for NASA effectiveness?	
What is the tradeoff between outsources and internal capabilities?	
What directions should NASA take? Which technology issues to address?	
Do you feel the funding is adequate proportioned to need? Why spend millions on MIR space station when it's a piece of junk with no appreciative return other than politics?	
NASA needs to focus more on questions related to commercial concerns.	Indirect Industry
Interviewee should identify products, services that his organization has used since last survey, and what future products/services will you be using in the future.	
With the proper understanding of the program the questions are fine. Not a general understanding of the programs. Therefore having to answer is a waste of time.	
More specific questions for specific customers, everyone sees things differently	
Ask some fundamental questions on US aeronautics policy and what would affect the customer's predilection to using technology.	
Ask the perception of how they're doing against their stretch goals?	
Has NASA public information system provided any information, which keyed direct contact interaction with NASA? Rate NASA's BAA's against the declared NASA program in terms of relevance, scope, and responsiveness.	Universities
Questions about individual center's performance, especially, performance at headquarters.	
How has NASA functioned as an agency with a motivation for bringing together other government organization (FAA, DOD, DOE, and Commerce) and industry and universities in the aerospace arena?	
Well the kind that you haven't asked from the people who are doing the actual R&D. NASA needs to get feedback into the system from both the sponsor and customer. NASA needs to add more personal interaction. Also more emphasis in the area of outreach for students as part of the survey.	
More questions on education.	
How can we improve communications and training? Emphasize training in acquisition process.	Associations

2. Survey Responses – Program Assessment

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Talk more about their goal of safety. More specific questions on how their specific safety goal relates to the programs.	
What has changed in past three years?	
What specific areas do you work with or have worked with in the past year with NASA? How frequently do you interact with NASA?	

3. Comments to the Administrator

3.1 Comments About the ASTT Program

36. What do you want to say to NASA administrator about the ASTT Program?

The respondents comments to the NASA administrator covered a wide range of interests and subjects.

Executive Responses	Group
Hold the course, balance is good, good support from industry -- don't overreact to public statements.	Direct Customer
That the ASTT Program is the most efficient dollars NASA spends. The ASTT industry/NASA roles are a more appropriate approach for space development (not including exploration) than currently allocated. For all the criticism, it's much more efficient when industry contributes funds and resources collaboratively.	
Have to do a better job of balancing fundamental research with focused programs areas, turbulence, trailing vortex breakdown.	
It is critical to stop cutting and forever changing.	
Don't sacrifice aeronautics work due to pressure of financing space transportation or other space activities.	
Convince other centers to be a national resource center of excellence of partnering with industry.	
The 3-pillar program and 10 goals are great but NASA won't reach goals unless more funding is available.	
Funding splits between aeronautics and manned space programs it too heavily on the manned-space side.	
On the right track, assure that program management stays strong with both a technical and business background.	
Strengthen university programs to develop next generation scientists and engineers.	
This is more important than you really realize. Please support both the aeronautics and space programs within the executive and legislative branches. Thank you for your support to date.	
Revisit affordability and ReCAT, should change industry and world. Need to understand implementation of scaling. Need to help with ATM system throughput.	
The subsonic section has inadequate advocacy with the public and is not on par with the space activity	
Aeronautics portion of the program has to be a larger portion of the overall NASA budget as compared to space.	
Thank you for covering the wide range in ASTT from general aviation to high-speed aeronautics.	
We are on a good course. Things have certainly been improving.	

Keep up the good work. Increase emphasis on general aviation.	
The only thing that I have to say is mainly a sound bite. The ASTT program is on the right track with its three pillars and ten goals. Unfortunately, we are under-investing in them. Kill the space programs. It is no longer the crown jewel that it once was, much less the natural assist it use to provide other programs. We need to decide whether we can be fiscally responsible and to it better and cheaper. The space program is on oxymoron, with what we have to do it's slower and more expensive.	
It's a great program but we have to make sure that aeronautics doesn't take second place to space for advocacy.	
Increase aeronautics budget (R/T base). Increase flexibility of R/T base to respond to new, innovative ideas. Improve propulsion system and materials research and expertise in NASA.	
Emphasize stronger role for aeronautics. Set goals and have funding in place to support goals. Involve industry more in processes.	
Need more information.	
Thanks for the opportunity to comment. Would like more connection with NASA programs.	
Very successful, should continue, need more money.	
He has established a responsive program with good metrics, but there needs to be a re-energizing of the current metrics. Critical mass needs to be assigned to establish these essential elements.	
Set the priorities in a reasonable manner to look at both at space and aeronautics so that they would be evenly handled. Space has gotten too much emphasis. Do not decrease the funding levels but treat them equally. NASA needs to find a way to close ranks on all the different talent with industry, government and academia. NASA can do much better in the growth area by using good strategy, good organization, and producing good products.	
There is a rich, good path for reform in the committee work that I mentioned. NASA also needs to recognize that NASA also includes "aeronautics". These issues are very important to America's economy. Stay close and listen to the advisory committee.	
Pillars and goals are brilliant to put focus into specific goals. NASA keep going in this direction. Don't neglect importance in aeronautic technology in serving national needs and increasing competitiveness in international rivals.	
Doing a good job on focusing limited resources. Zero sum gain programs won't do well. Starvation doesn't work.	
Recognize place for rotorcraft and tiltrotor.	
Needs to better coordinate code R and code Y. Should be more programs like ERAST.	
Its important to continue to solicit key industrial representatives to ensure that the program has relevance to the industry who are in most ways the customers of the technology.	
I would say that the program is good overall. Continue to solicit comments and suggestions from industry and try to implement more industry recommendations and please do something about the facilities.	
In support of this effort, we're really pleased with the program. Would really like to grow and expand in the future years.	

Exciting things happen when a manufactured product becomes a consumable because of the rapid advance of the technology. We need to learn the lessons of the PC industry and find a way to seed the same kind of avalanche in the industry markets.	
NASA should consider and address specific needs in industry, especially increase competitiveness. Keep up research in propulsion area and noise reduction area. Emphasize creature comforts and safety in GA.	
Improve technology transfer. GA revitalization is good but goals are "unrealistic and silly" - cost of GA aircraft cannot be brought down enough to support 10,000-plane production per year. 1/10 is more realistic.	
Put the "A" back in NASA in the military research.	
No comment.	
It needs a heavier emphasis on space technology.	
Goals are good. NASA needs to open up as going through goals. Allows for realistic programs to achieve goals.	
NASA needs to do what it says, that is to be a driver and pursuer of technology and get out to the hands-on business.	
Focus on affordability of systems as well as technology involved for practicality purposes for real world.	
I would like to see that when an initiative is started, first it needs to be a worthwhile program, but it needs to be on schedule and budget. In addition, the key administrators of this program need to stay with the program throughout the entire life of the program and their promotions should be based on the successes within that program.	
Continue programs that have an immediate, tangible, payback and that have a defined and constrained budget, e.g., Mars lander (1997).	
Critical importance to the country. Efforts should be doubled, Air Force involvement has diminished.	
I'm very happy to see that the ASTT is stronger focused and more dynamic. I like the way the program is now and not the way it was before.	
Focus the programs to half the number of research projects. Increase technical effectiveness and dramatically reduce size of planning and management. Report you results in a written format promptly. Use NASA's approach to business.	
More cooperation with military, there's been an attempt but not "tight" enough.	
The program, from a program management point of view, has benefited from having changed to the present model of planning and strategic management.	
The NASA Aero program has become too near-term and under funded for the nation's good. Industry is near-term; DOD budget is cut in half. NASA should restore funding, but not at expense of space program to restore competitiveness and national security. NASA should collaborate and integrate R&D planning between NASA, DOD, and industry.	
Increase the funding for the ASTT program. It is the basic aeronautical research that is used to improve the country. The lack of funding in the future, the picture may not be as rosy. NASA is aeronautics and space and has the	

leadership responsibility.	
NASA should focus on space and let the aeronautics industries handle aeronautics research.	
DOD is interested in being more closely related with NASA than in past. Could use a true personnel exchange; would be helpful.	
Faster, better, cheaper is not always good: cheaper sometimes means cheap, poor quality: downsizing-can't do more with less.	
Don't abandon long-term aeronautics research because it's all we have. Think very hard about what are the mechanisms for converting research into true innovative products and procedures.	
Aeronautics needs to remain a strong part of the overall NASA program, and not be reduced in favor of "space" programs.	
Don't forget general aviation, general aviation should get a better percentage of funding. Can do all want with commercial and spacecraft but have to go up and come down through earth infrastructure.	
Loss of key personnel, key capability, need to recruit the best personnel to stay on top of programs--support for stable predictable funding.	
Thanks for the wonderful job you do.	Indirect Customer
Quit using taxpayers' money to fund competition because you are discouraging private investment and distributing technology that is critical to our national defense.	
I think that NASA's finest hour was the Apollo program. I guess that NASA needs to put more resources into the areas that will affect products where the largest number of people will end up using them. Less in space and more in the areas of general aviation and transportation. A program that would actually grab the interest of everyone, like a mission to Mars, where hopefully more general technology and maybe a number of by products would be spun-off.	
The wind tunnel has been invaluable in assisting in the development of IR&D aircraft project. NASA hit a home run with that. For me personally, the advanced propulsion development program or GAT is an extremely important project that needs to continue. Please keep it going. I would truly appreciate additional programs that are directly related to aircraft services and support processes.	
Production orientation should be clearer. Center to center rivalry needs to be addressed.	
Describe what is and motivate it better.	
Restart Annual Airline briefings, NASA takes customer priorities, internalizes them and than sets own priority.	
Think the manned space program over funded and unmanned not funded enough and move some of the resources into ASTT program.	
Stop doing things for PR value only.	
The current policy towards development of space launch technology and systems will not be as effective as adopting a strategy in which the government procures launch services from commercial services.	
Figure out how to get technology on products sooner if you want any hope of meeting your 10 goals.	
Release technology from X-33, X-34 six months after availability to Lockheed Martin. Develop cooperative programs	

with space transportation companies as historically been done with aeronautics.	
The program sounds fine conceptually but the bits and pieces do not fit very well in terms of programs. There are some serious interface problems between high-speed, high-altitude aircraft and low-speed, low-altitude aircraft and the infrastructure that must service them both. Two major areas that need to be more vigorously addressed are environment and "facilities", terminal area where GPS can play a role in solving the interface problems. The paradigm of radar based ATC has got to be broken by system integration that is more sophisticated than the FAA has ever faced with regard to certification data. NASA's program in regard to the areas just mentioned should be focused in the area of developing information whereby certification criteria is either more available or is a direct fallout of the technical data developed in research programs. In this one area alone more Americans will be touched by the work of NASA than any other thing they can do. Basically, this will produce safe, advanced operation systems for both commercial and private aviation, which brings the program back into balance with public need. And, I apologize for not mentioning space.	Universities
Right now there's only an acting administrator for ASTT. ASTT needs a very strong, technically competent leader, a good communicator, someone with vision for this role. It does not serve either NASA or national interests to put a technically and administratively weak person into the Associates Administrator position.	
I firmly believe that aeronautics and space are key to US competition. It's a component that NASA has to keep and support well. One concern is that universities are recognized for the contributions they have made in the past to basic research and see that we're supported for the future.	
Don't let aeronautics suffer as a result of maintaining the space operation side of NASA.	
Need to be funded at a higher level with more funding going to R&D. Keep it from going to the space station.	
Balance the need for great break through with the importance of maintaining a strong scientific infrastructure within NASA.	
Don't let large industry drive high-speed civil. Follow the recommendations of National Research Council on high-speed civil transport.	
Keep ASTT well-funded, particularly aeronautics.	
Is it necessary for NASA to be so broad? Aeronautics should stick to aeronautics, NASA should not compete with universities, should be partners.	
Stop the "CYA" attitude--do what NASA should do--R&T.	
A healthy ASTT Program is vital to US. Stop management by hype; return to substance.	
NASA has a well-integrated program with both science and technology that has come out of the microgravity project. They need to continue to support access to space through this program. Do not overlook the scientific talent and hard goals that come from fundamental research.	
I would like to see more focus on university partnerships rather than industry partnerships. Focus management to align organizations at all levels behind Three Pillars.	
Job well done!!	
Appreciate that initiative was taken to try to fund and focus GA needs. Ensure that managers have top level support	

and increase budget to meet goals.	
Keep up pressure on aeronautics programs.	Associations
Relate ASTT to broad national needs that impact our country's economy, security and quality. It's not that they don't do these things but they need to be an articulator of how these things affect the country as a whole even if average person never see themselves as a direct beneficiary. How effects on economy of country may well be based on how well we communicate that the average individual may have a better job in Ohio because we have products sent to China. Relate the end results of ASTT to everyday need of American cities.	
Increase emphasis on aeronautics funding.	
I'd like to see more emphasis on specific programs than on basic research. He needs to make sure that he and his people have better communication and cooperation with FAA.	
You could market this program better by emphasizing additional technologies such as human factors.	
Emphasize aeronautics, CAT, pilot fatigue, and operation issues on MM/behavior.	
Continue to emphasize R&T programs necessary to make US rotorcraft industry competitive in world markets.	
Keep providing results to hold confidence of Congress to hold the program. But, reach out to industry and identify specific programs to which those funds should be targeted.	

Appendices

Appendix A – Survey Population and Respondents

This appendix provides a list of the organizations from which the survey respondents were selected.

- In planning and conducting the survey, each customer organization was identified into one of 20 segments. Two segments were not interviewed (computer system/component manufacturers and automobile/automobile engine manufacturers).
- In analyzing and reporting the results of the survey, each customer organization was identified into several overlapping categories. These include:
 - One of two position levels within their organization (Executive or Mid-Level Manager)
 - One of five customer groups (see table)
 - Benchmark Companies
 - Members of the Aeronautics Advisory Committee (AAC)

Customer Segments

Direct Customers

1. Large Civil Transport Manufacturers	1. Direct Industry
2. High Performance Aircraft Manufacturers	“
3. Aircraft Engine Manufacturers	“
4. Rotorcraft Manufacturers	“
5. GA/Commercial/Sport/Business Aircraft Manufacturers	“
6. Launch Vehicle Manufacturers	“
7. Launch Vehicle/Engine/Propellant Manufacturers	“
8. Aircraft Instrument/Avionics Manufacturers	“
9. Specialized Aerospace Services	“
11. Department of Defense Entities	3. Government
12. Other Federal Agencies	“

Indirect Customers

13. Aviation Metal/Metal Component Manufacturers	2. Indirect Industry
14. Non-Metallic Aviation Materials Manufacturers	“
15. Air Carriers	“
16. Satellite Manufacturers and Other Launch Service Customers	“
18. Universities (Major ASTT Grantees)	4. Universities
19. Aviation Associations	5. Associations/Publishers
20. Aerospace Analysts and Advocacy Groups	“

Appendix A – Executive Survey Population and Respondents

1998 NASA Customer Survey—Full Report 01/13/00 4:31 PM

DIRECT INDUSTRY COMPANY	LOCATION	NASA CATEGORY	AAC MEMBER	BENCHMARK CUSTOMER
Boeing	Long Beach, CA	1		X
Boeing	Long Beach, CA	1		X
Boeing Commercial Airplane Group	Renton, WA	1		X
Boeing Commercial Airplane Group	Seattle, WA	1		X
Boeing Commercial Airplane Group	Seattle, WA	1		X
Boeing Commercial Airplane Group	Seattle, WA	1	X	X
Boeing Defense & Space Group	Seattle, WA	2		X
Boeing McDonnell Douglas	St. Louis, MO	2	X	X
Lockheed Martin	Littleton, CO	2		X
Lockheed Martin	Denver, CO	2		X
Rockwell-Rocketdyne	Canoga Park, CA	2		X
The Boeing Company	Seattle, WA	2		X
Allied Signal Aerospace	Phoenix, AZ	3		X
Allison Engine Company	Indianapolis, IN	3		
GE Aircraft Engines	Cincinnati, OH	3	X	X
Teledyne	Toledo, OH	3		X
United Technologies	East Hartford, CT	3		X
UTC Pratt & Whitney	West Palm Beach, FL	3		X
Williams International	Walled Lake, MI	3		X
Williams International	Walled Lake, MI	3		X
Augusta Aerospace	Philadelphia, PA	4		
Bell Helicopter Textron	Fort Worth, TX	4		X
Bell Helicopter Textron	Fort Worth, TX	4		X
Boeing Helicopters	Philadelphia, PA	4		X
Boeing Helicopters	Philadelphia, PA	4		X
Boeing/McDonnell Douglas	Mesa, AZ	4		X
Enstrom	Menominee, MI	4		
Enstrom	Menominee, MI	4		
UTC/Sikorsky	Stratford, CT	4		X
UTC/Sikorsky	Stratford, CT	4	X	X
Aurora Flight Science	Manassas, VA	5		
Cessna Aircraft Company	Wichita, KS	5		X
Cirrus Design	Duluth, MN	5		
Piper Aircraft, Inc.	Vero Beach, FL	5		
Piper Aircraft, Inc.	Vero Beach, FL	5		
Raytheon	Wichita, KS	5		X

Appendix A – Executive Survey Population and Respondents

1998 NASA Customer Survey—Full Report 01/13/00 4:31 PM

DIRECT INDUSTRY COMPANY	LOCATION	NASA CATEGORY	AAC MEMBER	BENCHMARK CUSTOMER
Scaled Composites	Mojave, CA	5		X
Skystar/Kitfox	Nampa, ID	5		
Boeing	Colorado Springs, CO	6		X
Lockheed Martin	Palmdale, CA	6		X
Orbital Sciences	Falls Church, VA	6		X
Orbital Sciences	Falls Church, VA	6		X
Space Access	Palmdale, CA	6		
Boeing/Rocketdyne	Canoga Park, CA	7		X
Boeing/Rocketdyne	Canoga Park, CA	7		X
ARNAV	Puyallup, WA	8		
ERC, Inc.	Tullahoma, TN	8		
Honeywell CAS-SPO	Minneapolis, MN	8		X
Rockwell International Collins Avionics	Cedar Rapids, IA	8		X
EMA	Mansfield, TX	9		
AEDC	Arnold AFB, TN	11		
Department of the Air Force	Winchester, TN	11		
DOD	Washington, DC	11		
Hicks & Associates, Inc.	McClean, VA	11		X
U.S. Navy (ret.)	Washington, DC	11	X	
Wright Laboratories USAF	Wright Patterson AFB, OH	11		
FAA	Washington, DC	12		X
FAA - AAR2	Washington, DC	12		X
FAA Environmental and Energy	Washington, DC	12		X
Federal Railroad Administration	Washington, DC	12		
NOAA/National Weather Service	Silver Spring, MD	12		
Volpe Nat'l Trans System Center	Cambridge, MA	12		
Volpe Nat'l Trans System Center	Cambridge, MA	12		
INDIRECT INDUSTRY COMPANY	LOCATION	NASA CATEGORY	AAC MEMBER	BENCHMARK CUSTOMER
Brush-Wellman	Cleveland, OH	13		X
DuPont Tribon Composites, Inc.	Cleveland, OH	14		X
Pratt & Whitney	West Palm Beach, FL	14		X
VisionAire Corporation	Chesterfield, MO	14		
VisionAire Corporation	Chesterfield, MO	14		
Federal Express	Memphis, TN	15		X
Northwest Airline	St. Paul, MN	15	X	
United Airlines, Maintenance Operations	San Francisco, CA	15		
Loral Corporation Space Systems	Palo Alto, CA	16		X

Appendix A – Executive Survey Population and Respondents

1998 NASA Customer Survey—Full Report 01/13/00 4:31 PM

INDIRECT INDUSTRY COMPANY	LOCATION	NASA CATEGORY	AAC MEMBER	BENCHMARK CUSTOMER
TRW	Redondo Beach, CA	16		X
Aerospace College of Engineering	Boulder, CO	18		
Arizona State University	Tempe, AZ	18	X	
Cleveland State University	Cleveland, OH	18		
Embry-Riddle Aero. University	Daytona Beach, FL	18		
Embry-Riddle Aero. University	Daytona Beach, FL	18		
Embry-Riddle Aero. University	Daytona Beach, FL	18		
Georgia Institute of Technology	Atlanta, GA	18		
Georgia Tech Research Institute	Smyrna, GA	18		
Joint Institute for Advanced Flight Science	Hampton, VA	18		
North Carolina A&T University	Greensborough, NC	18	X	
Purdue University	Lafayette, IN	18		
Purdue University	Lafayette, IN	18		
Rensselaer Polytechnic Institute	Troy, NY	18		
University of California at Los Angeles	Los Angeles, CA	18	X	
University of Colorado at Boulder	Boulder, CO	18		
University of Maryland	College Park, MD	18		
University of Virginia	Charlottesville, VA	18		
University of Virginia	Charlottesville, VA	18		
Aerospace Industries of America	Washington, DC	19		
Air Transport Association	Washington, DC	19		
Airline Pilots Association	Herndon, VA	19		
American Helicopter Society	Alexandria, VA	19		
AOPA Safety Foundation	Frederick, MD	19		
National Business Aircraft Association	Washington, DC	19		
Regional Airline Association	Washington, DC	19		
RTCA	Washington, DC	19		
Aviation Analyst	Encinitas, CA	20	X	
Gellman Research Associates	Jenkintown, PA	20		

Appendix B – Complete Customer Survey

1998 NASA Aeronautics and Space Transportation Technology (ASTT)

Customer Survey

Instructions:

For most questions, circle the number from 1 to 10 which best reflects your judgment. For all other questions, follow the instructions in the question. If you are unable to (or decline to) answer a question, don't circle or fill-in anything. If you wish to elaborate on or qualify an answer to a greater extent than the answer space allows, please put that information on the back of this page and cross-reference it to the applicable question.

Before starting:

Please indicate to which ASTT enterprise mission area your answers fundamentally apply:

- ☐ Aeronautics
☐ Space Transportation Technology
☐ Aeronautics *and* Space Transportation Technology

Introductory Questions:

This first question deals with your overall level of interest in the ASTT Program:

- On a scale of one to ten, with one being the lowest level of interest and ten being the highest level of interest, what is your overall level of interest in the ASTT Program?

Low 1 2 3 4 5 6 7 8 9 10 High

Using this group of index cards that present the ASTT mission areas, please select all the areas that greatly interest you (index cards set 1). (Select all that apply)

- a) Advanced Subsonic Transport
- b) High Speed Research
- c) High Performance Aircraft
- d) Hypersonics
- e) High Performance Computing
- f) Critical Technology (R&T Base)
- g) Facilities and Services
- h) Space Transportation Technology
- i) General Aviation
- j) Rotorcraft
- k) Other

- On a scale of one to ten, with one being "poorly" and ten being "well", how well do you understand the mission of NASA's ASTT Program?

Poorly 1 2 3 4 5 6 7 8 9 10 Well

3. Using the same “poorly to well” scale, how well are the current mission areas of NASA’s ASTT Program aligned to you organization’s needs?

Poorly 1 2 3 4 5 6 7 8 9 10 Well

What current mission areas (question 1 index cards) of NASA’s ASTT Program are most important to you organization?

- a) Advanced Subsonic Transport
- b) High Speed Research
- c) High Performance Aircraft
- d) Hypersonics
- e) High Performance Computing
- f) Critical Technology (R&T Base)
- g) Facilities and Services
- h) Space Transportation Technology
- i) General Aviation
- j) Rotorcraft
- k) Other

4. Using the same “poorly to well” scale, how well is NASA’s ASTT Program accomplishing its mission?

Poorly 1 2 3 4 5 6 7 8 9 10 Well

What current mission areas is NASA’s ASTT Program accomplishing the best?

- a) Advanced Subsonic Transport
- b) High Speed Research
- c) High Performance Aircraft
- d) Hypersonics
- e) High Performance Computing
- f) Critical Technology (R&T Base)
- g) Facilities and Services
- h) Space Transportation Technology
- i) General Aviation
- j) Rotorcraft
- k) Other

Questions Relating to NASA’s ASTT Program Three Pillars and Ten Goals:

5. Using a “familiar to unfamiliar” scale, with one being unfamiliar and ten being familiar, how familiar were you with the Pillars & Goals before this survey?

Unfamiliar 1 2 3 4 5 6 7 8 9 10 Familiar

How did you learn about the Pillars and Goals?

- a. ____ NASA Administrator’s Speech
- b. ____ Pamphlet Mailed to You
- c. ____ Letter Introducing the Survey
- d. ____ From the Internet
- e. ____ Other _____

6. Using the a “poorly to well” scale, overall, how well are the Goals aligned to your organization’s needs?

Poorly 1 2 3 4 5 6 7 8 9 10 Well

Which Goals are best aligned to your organization’s needs?

What important goal, from your organization’s perspective, is missing?

7. Using the same “poorly to well” scale, overall, how well are the Goals aligned to *national* needs?

Poorly 1 2 3 4 5 6 7 8 9 10 Well

Which Goals are best aligned to national needs?

What important goal, from a national perspective, is missing?

8. Using the same “poorly to well” scale, overall, how well are NASA’s current programs aligned to the Goals?

Poorly 1 2 3 4 5 6 7 8 9 10 Well

Which current ASTT Programs are best aligned to the goals?

9. Facilities and Services

On a scale of one to ten, with one being the lowest level of satisfaction and ten being the highest level of satisfaction, what is your level of satisfaction with NASA’s ASTT Program?

Low 1 2 3 4 5 6 7 8 9 10 High

This next question deals with what facilities and services are you most and least satisfied with?

Using this group of index cards that present the *facilities and services* that NASA provides, please select the issues of great importance to your organization, then those of moderate importance, and finally, select those of lesser importance to your organization.

- a) Charge for Using the Facility or Service
- b) Level of Technical Expertise
- c) State-of-the-Art Facilities
- d) Timeliness of the Results
- e) Convenience of Facility or Service
- f) Ownership of Intellectual Property
- g) Familiarity and/or Trust
- h) Availability of the Facility or Service
- i) Location of the Facility or Service
- j) Quality of the Data
- k) Protection of the Data
- l) Computational Quality
- m) Ease of Technology Transfer
- n) Ownership by the United States Government

10. Technology Transfer

Using this group of index cards that present the *technology transfer methods* that NASA uses, please select those that work best for your organization, then those that work moderately well, and finally those that work least well for your organization.

- a) Written Technical Reports
- b) Informal Technical Discussions
- c) Technology Demonstration Programs
- d) Contracts With Industry
- e) Government And Industry Personnel Exchanges (continued)
- f) Non-Contract Cooperative Programs
- g) Conferences, Symposia, And Workshops
- h) Other

11. Program Planning

Using the “low to high” scale, with one being low and 10 being high, how would you rate NASA’s Program planning?

Low 1 2 3 4 5 6 7 8 9 10 High

Does NASA adequately involve your organization in its program planning for its ASTT program?

YES ____ NO ____

Does NASA plan research programs to provide results in a form, structure and format useful to you?

YES ____ NO ____

12. Using the “low to high” scale, with one being low and ten being high, how would you rate NASA’s Outreach and External Communication?

Low 1 2 3 4 5 6 7 8 9 10 High

Does NASA ask for your input on plans and issues important to your organization?

YES ____ NO ____

Does NASA use your input?

YES ____ NO ____

Does NASA provide feedback on plans/issues important to your organization?

YES ____ NO ____

13. Using the “low to high” scale, what is your overall level of satisfaction with NASA?

Low 1 2 3 4 5 6 7 8 9 10 High

In what areas are you most satisfied with NASA?

In what areas are you least satisfied with NASA?

14. Using the same “low to high” scale, what is your overall level of satisfaction with NASA’s ASTT products?

Low 1 2 3 4 5 6 7 8 9 10 High

What products were you most satisfied with?

What products were you least satisfied with?

15. On a scale of one to ten, with one being worse and ten being better, how does your organization’s overall level of satisfaction with NASA compare with its satisfaction 3 to 6 years ago (before the last surveys)?

Worse 1 2 3 4 5 6 7 8 9 10 Better

In what area(s) has your level of satisfaction increased?

In what area(s) has your level of satisfaction decreased?

16. NASA provides key laboratory, computing and test facilities.

Disagree 1 2 3 4 5 6 7 8 9 10 Agree

What NASA facilities do you view as being essential to the conduct of leading-edge R&D?

17. NASA downsizing has affected its ability to support its customers.

Disagree 1 2 3 4 5 6 7 8 9 10 Agree

In what ways, if any, has NASA downsizing affected your organization?

18. NASA is a key contributor to the education of scientists & engineers.

Disagree 1 2 3 4 5 6 7 8 9 10 Agree

In what ways can NASA improve the education and training of our next generation of scientists and engineers?

19. NASA cooperates with other organizations to make cost-effective use of limited R&D resources, skills and facilities.

Disagree 1 2 3 4 5 6 7 8 9 10 Agree

In what ways can NASA improve cooperation with other organizations?

20. The ASTT Program effectively balances fundamental (R&T base) research with its focused-program research.

Disagree 1 2 3 4 5 6 7 8 9 10 Agree

Should NASA pursue more fundamental research or more focused-program research, and why?

21. The ASTT Program effectively balances analytical, computational, ground-based experimental and flight research.

Disagree 1 2 3 4 5 6 7 8 9 10 Agree

Should NASA change its mix of analytical, computational, ground-based experimental and flight research, and why?

22. The ASTT engineers & scientists play a key role in the development of innovative or enhanced technical solutions.

Disagree 1 2 3 4 5 6 7 8 9 10 Agree

In what areas have NASA engineers & scientists played a key role?

In what area have they not played a key role?

On a scale of one to ten, with one being "ineffective" and ten being "effective" how effective is NASA's ASTT Program in:

23. performing fundamental research

Ineffective 1 2 3 4 5 6 7 8 9 10 Effective

24. improving national security (via partnerships with the DOD)

Ineffective 1 2 3 4 5 6 7 8 9 10 Effective

25. developing/transferring technologies for economic competitiveness

Ineffective 1 2 3 4 5 6 7 8 9 10 Effective

26. maintaining the superiority of U.S. aircraft and engines

Ineffective 1 2 3 4 5 6 7 8 9 10 Effective

27. developing a superior, affordable, global air transportation system

Ineffective 1 2 3 4 5 6 7 8 9 10 Effective

28. developing superior, affordable, space launch systems

Ineffective 1 2 3 4 5 6 7 8 9 10 Effective

29. ensuring long-term environmental compatibility of aerospace systems

Ineffective 1 2 3 4 5 6 7 8 9 10 Effective

30. making partnerships with government, industry, and universities

Ineffective 1 2 3 4 5 6 7 8 9 10 Effective

31. How effective is the overall ASTT contribution to U.S. R&D needs?

Ineffective 1 2 3 4 5 6 7 8 9 10 Effective

What can ASTT do to increase its overall effectiveness in contributing to U.S. R&D needs?

Closing Questions (to be answered by customer executives only):

32. On a scale of one to ten, with one being worse and ten being improved, in your opinion, has NASA's planning worsened, stayed the same, or improved over the last few years?

Worse 1 2 3 4 5 6 7 8 9 10 Improved

What can NASA do to improve its planning?

33. Have you participated in a previous NASA Aero Survey?

___ 1992 Yes ___ 1995 Yes ___ No

If you participated in the 1992 and/or 1995 survey, did the results of the survey in any way change your organization's relationship with NASA? If so, how?

34. Using the worse to better scale, compared to previous NASA Aero surveys (1992 and 1995), how would you rate this one?

Worse 1 2 3 4 5 6 7 8 9 10 Better

How can future surveys be improved?

35. For the next survey, what new question(s) should be asked?

36. What do you want to say to the NASA Administrator about the ASTT Program?

Appendix C – Quantitative Survey Data Statistical Summary

This appendix contains data that is derived from the results of the quantitative portion of the 1998 NASA Customer Survey.

Page C2 shows a summary of the results for all ratings questions (ratings from 1 through 10) in the order the questions were asked.

Page C3 shows this same summary in descending order of the sample mean value.

Page C4 presents the results of a test of the executive and mid-level manager populations to determine if there were significant differences in the mean values of the two populations.

Statistical Summary of Quantitative Questions

Question Number and Topic	Sample Size (N)			Sample Mean			Sample Standard Deviation		
	Executive	Mid-Level	Total	Executive	Mid-Level	Total	Executive	Mid-Level	Total
1. Level of Interest in ASTT Program	98	71	169	8.07	8.45	8.23	2.02	1.57	1.85
2. Understand Mission of ASTT	100	72	172	6.33	6.42	6.37	2.64	2.27	2.48
3. Mission Areas Aligned to Org. Needs	92	71	163	5.85	5.83	5.84	1.94	2.12	2.02
4. Is ASTT Accomplishing Mission	80	60	140	5.91	6.08	5.99	1.84	1.62	1.74
5. Familiar with Pillars and Goals	101	72	173	6.03	6.19	6.10	3.34	2.99	3.19
6. Goals Aligned to Organizational Needs	98	72	170	6.77	6.46	6.64	2.18	2.08	2.13
7. Are Goals Aligned to National Needs	99	72	171	7.74	8.04	7.87	1.57	1.24	1.44
8. Are Programs Aligned to Goals	91	69	160	6.25	6.51	6.36	1.90	1.67	1.80
9. Satisfied with Facilities and Services	88	69	157	6.00	6.10	6.04	2.15	1.99	2.07
11. Rate Program Planning	93	72	165	5.95	6.10	6.01	2.09	1.77	1.95
12. Rate Outreach and Communications	100	71	171	6.25	6.45	6.33	2.12	1.94	2.05
13. Overall Satisfaction with NASA	100	72	172	6.31	6.97	6.59	1.90	1.47	1.76
14. Overall Satisfaction with Products	89	65	154	6.55	6.11	6.36	1.57	1.83	1.70
15. Compare Satisfaction w/ 3-6 Yrs. Ago	87	68	155	6.55	6.47	6.52	2.00	1.73	1.88
16. NASA Provides Key Facilities	98	71	169	7.55	7.66	7.60	1.87	1.60	1.76
17. NASA Downsizing Affects Customers	96	72	168	5.89	5.78	5.84	2.82	2.77	2.79
18. Contributes to Education of Sci. & Eng.	99	69	168	7.13	6.88	7.03	2.41	2.05	2.26
19. Cooperates with Other Organizations	93	69	162	6.02	6.57	6.25	2.28	2.01	2.18
20. Balances R&T and Focused Programs	81	62	143	5.67	6.13	5.87	2.27	1.89	2.12
21. Balances Anal., Comp., Exp., and Test	80	66	146	6.81	6.77	6.79	1.81	1.70	1.75
22. NASA Provides Innovative Solutions	91	70	161	6.85	7.19	6.99	1.92	1.47	1.74
23. Performs Fundamental Research	93	69	162	6.39	6.17	6.30	1.78	1.81	1.79
24. Improves National Security	70	45	115	5.46	4.49	5.08	2.06	1.88	2.04
25. Dev. Technology for Competitiveness	93	67	160	5.61	5.99	5.77	2.09	1.71	1.94
26. Superior U.S. Aircraft and Engines	92	68	160	6.64	6.68	6.66	1.85	1.68	1.77
27. Superior Global Air Transport System	88	59	147	5.51	5.90	5.67	2.05	1.87	1.98
28. Superior Space Launch Systems	82	57	139	5.82	6.61	6.14	2.40	1.94	2.25
29. Aero. Environmental Compatibility	83	61	144	6.63	6.77	6.69	1.65	1.36	1.53
30. Partnerships with Gov., Ind. and Univ.	94	70	164	6.60	7.03	6.78	1.96	1.50	1.79
31. Contribution to U.S. R&D Needs	93	66	159	6.45	6.70	6.55	1.64	1.46	1.57

Quantitative Questions Sorted by Total Sample Mean (Descending Order)

Question Number and Topic	Sample Size (N)			Sample Mean			Sample Standard Deviation		
	Executive	Mid-Level	Total	Executive	Mid-Level	Total	Executive	Mid-Level	Total
1. Level of Interest in ASTT Program	98	71	169	8.07	8.45	8.23	2.02	1.57	1.85
7. Are Goals Aligned to National Needs	99	72	171	7.74	8.04	7.87	1.57	1.24	1.44
16. NASA Provides Key Facilities	98	71	169	7.55	7.66	7.60	1.87	1.60	1.76
18. Contribute to Education of Sci. & Eng.	99	69	168	7.13	6.88	7.03	2.41	2.05	2.26
22. NASA Provides Innovative Solutions	91	70	161	6.85	7.19	6.99	1.92	1.47	1.74
21. Balances Anal., Comp., Exp., and Test	80	66	146	6.81	6.77	6.79	1.81	1.70	1.75
30. Partnerships with Gov., Ind. and Univ.	94	70	164	6.60	7.03	6.78	1.96	1.50	1.79
29. Aero. Environmental Compatibility	83	61	144	6.63	6.77	6.69	1.65	1.36	1.53
26. Superior U.S. Aircraft and Engines	92	68	160	6.64	6.68	6.66	1.85	1.68	1.77
6. Goals Aligned to Organizational Needs	98	72	170	6.77	6.46	6.64	2.18	2.08	2.13
13. Overall Satisfaction with NASA	100	72	172	6.31	6.97	6.59	1.90	1.47	1.76
31. Contribution to U.S. R&D Needs	93	66	159	6.45	6.70	6.55	1.64	1.46	1.57
15. Compare Satisfaction w/ 3-6 Yrs. Ago	87	68	155	6.55	6.47	6.52	2.00	1.73	1.88
2. Understand Mission of ASTT	100	72	172	6.33	6.42	6.37	2.64	2.27	2.48
14. Overall Satisfaction with Products	89	65	154	6.55	6.11	6.36	1.57	1.83	1.70
8. Are Programs Aligned to Goals	91	69	160	6.25	6.51	6.36	1.90	1.67	1.80
12. Rate Outreach and Communications	100	71	171	6.25	6.45	6.33	2.12	1.94	2.05
23. Performs Fundamental Research	93	69	162	6.39	6.17	6.30	1.78	1.81	1.79
19. Cooperates with Other Organizations	93	69	162	6.02	6.57	6.25	2.28	2.01	2.18
28. Superior Space Launch Systems	82	57	139	5.82	6.61	6.14	2.40	1.94	2.25
5. Familiar with Pillars and Goals	101	72	173	6.03	6.19	6.10	3.34	2.99	3.19
9. Satisfied with Facilities and Services	88	69	157	6.00	6.10	6.04	2.15	1.99	2.07
11. Rate Program Planning	93	72	165	5.95	6.10	6.01	2.09	1.77	1.95
4. Is ASTT Accomplishing Mission	80	60	140	5.91	6.08	5.99	1.84	1.62	1.74
20. Balances R&T and Focused Programs	81	62	143	5.67	6.13	5.87	2.27	1.89	2.12
17. NASA Downsizing Affects Customers	96	72	168	5.89	5.78	5.84	2.82	2.77	2.79
3. Mission Areas Aligned to Org. Needs	92	71	163	5.85	5.83	5.84	1.94	2.12	2.02
25. Dev. Technology for Competitiveness	93	67	160	5.61	5.99	5.77	2.09	1.71	1.94
27. Superior Global Air Transport System	88	59	147	5.51	5.90	5.67	2.05	1.87	1.98
24. Improves National Security	70	45	115	5.46	4.49	5.08	2.06	1.88	2.04

Analysis of Differences in Populations of Executive and Mid-Level Manager Responses

- Applied Student's T-Test to Each Question for Executive and Mid-Level Managers Populations
- Analysis Identified 3 Questions with Significant Differences ($p < .05$) in Mean Values. These Questions Were:

	Mean Values	
	Executive	Mid-Level
13. What is your overall level of satisfaction with NASA?	6.31	6.97
24. How effective is NASA's ASTT program in improving national security?	5.46	4.49
28. How effective is NASA's ASTT program in developing superior, affordable space launch systems?	5.82	6.61

Appendix D – Comparisons with Prior Surveys

This appendix compares the results of the 1998 survey with comparable questions in the 1995 and 1992 surveys.

- 24 comparable questions were found in the 1995 survey
- 3 comparable questions were found in the 1992 survey.

Quantitative Comparison of Similar Questions between 1998 and 1995 Surveys

1998 Question Number and Topic	1995 Question Number	Comments	1998 Mean	1995 Mean	Difference 1998-1995	Significant Differences (>=0.5)
1. Level of Interest in ASTT Program	2		8.2	8.2	0.0	
2. Understand Mission of ASTT	1		6.4	7.0	-0.6	-0.6
3. Mission Areas Aligned to Org. Needs	3		5.8	6.1	-0.3	
4. Is ASTT Accomplishing Mission	4		6.0	6.3	-0.3	
9. Satisfied with Facilities and Services	5.1		6.0	6.8	-0.8	-0.8
11. Rate Program Planning	5.3		6.0	5.6	0.4	
12. Rate Outreach and Communications	5.4		6.3	6.2	0.1	
13. Overall Satisfaction with NASA	6		6.6	6.4	0.2	
15. Compare Satisfaction w/ 3-6 Yrs. Ago	7		6.5	6.3	0.2	
16. NASA Provides Key Facilities	9.5		7.6	7.7	-0.1	
18. Contributes to Education of Sci. & Eng.	9.7		7.0	6.7	0.3	
19. Cooperates with Other Organizations	9.8		6.3	6.1	0.2	
23. Performs Fundamental Research	9.1	Effectiveness	6.3	7.5	-1.2	-1.2
23. Performs Fundamental Research	10.1	Contribution	6.3	7.1	-0.8	-0.8
24. Improves National Security	10.2		5.1	6.0	-0.9	-0.9
25. Dev. Technology for Competitiveness	9.3	Effectiveness	5.8	6.9	-1.1	-1.1
25. Dev. Technology for Competitiveness	10.3	Contribution	5.8	6.6	-0.8	-0.8
26. Superior U.S. Aircraft and Engines	11.1		6.7	6.6	0.1	
27. Superior Global Air Transport System	11.2		5.7	6.2	-0.5	-0.5
29. Aero. Environmental Compatibility	10.4	Contribution	6.7	6.8	-0.1	
29. Aero. Environmental Compatibility	11.3	Achievement	6.7	6.4	0.3	
30. Partnerships with Gov., Ind. and Univ.	9.4	Effectiveness	6.8	7.0	-0.2	
30. Partnerships with Gov., Ind. and Univ.	11.4	Achievement	6.8	6.3	0.5	0.5
31. Contribution to U.S. R&D Needs	9.9		6.6	7.3	-0.7	-0.7

Notes:

- Questions 23, 25, 29 and 30 had two components in the 1995 survey as noted in the column labeled Comments.
- Positive differences are in boldface; negative differences are in italics with a different type font.

Analysis of Differences in 1998 and 1995 Quantitative Survey Results

- Important areas of Program Planning, Outreach and Communication, Overall Satisfaction with NASA, and Satisfaction with NASA Compared to 3-6 Years Ago all exhibit higher ratings in 1998 survey.
- Partnerships with Government, Industry and Universities rated higher in the 1998 survey when compared with the “Achievement” question from the 1995 survey.
- Understanding the Mission of ASTT ranked lower in the 1998 survey. One possible explanation is the inclusion of Space Transportation may have confused some respondents who were familiar with the former Office of Aeronautics.
- Respondents rated their satisfaction with NASA’s ASTT facilities lower in the 1998 survey. This may be due to competition with international facilities that are newer.
- Respondents rated NASA’s performance of fundamental research lower in the 1998 survey. Many respondents thought NASA should concentrate on fundamental research and let industry pursue more focused-program research.
- Respondents rated NASA’s support of national security lower in the 1998 survey. This question had the lowest mean score in the quantitative portion of the survey.
- Respondents rated NASA’s development and/or transfer of technology for economic competitiveness lower in the 1998 survey.
- Respondents rated NASA’s efforts in developing a superior global air transportation system lower in the 1998 survey. This may be one result of cessation of the Reduced Cost of Air Travel (ReCAT) program.
- Respondents rated NASA’s contribution to U. S. research and development needs lower in the 1998 survey.

Appendix D – Comparisons with Prior Surveys

1998 NASA Customer Survey—Full Report 01/13/00 4:31 PM

Comparison of Similar Questions between 1998 and 1992 Surveys

- Quantitative portions of the 1998 and 1992 survey are quite different. Direct comparison is not possible for most questions.
- Three topics were selected for analysis: Program Planning, Technology Transfer, and Balance between Fundamental Research and Focused-Program Research.

Program Planning

1992 Question 20: Do you feel NASA involves industry adequately in program planning? (Yes/No)

1992 Results: Yes – 47 percent; No – 50 percent; Don't Know – 3 percent.

1998 Question 11b: Does NASA adequately involve your organization in its program planning? (Yes/No)

1998 Results: Yes - 57.6 percent; No – 42.4 percent.

Technology Transfer

1992 Question 13: An important issue for NASA Aeronautics is the effectiveness of technology transfer. Please rate the effectiveness of the following processes using a 10 point scale:

	<u>Results</u>
Informal technical discussions	7.49
Written technical reports	7.07
Conferences, Symposia, Workshops	7.03
Contracts with industry	7.01
Non-contract cooperative programs	6.85
Technology demonstration programs	6.81
Government and industry personnel exchanges	5.98

1998 Question 10: Which methods of technology transfer work best for your company, which moderately well, and which work least well?

	<u>Best</u>	<u>Moderately Well</u>	<u>Least Well</u>
Contracts with industry	66%	19%	15%
Informal technical discussions	58%	30%	12%
Written technical reports	42%	41%	17%
Non-contract cooperative programs	37%	36%	28%
Conferences, Symposia, Workshops	33%	45%	23%
Government and industry personnel exchanges	24%	32%	44%
Other	15%	18%	67%

Balance between Fundamental Research and Focused Program Research

1992 Question 10: Given the current level of funding for NASA Aeronautics, what is your perception of the balance between fundamental discipline research and technology versus focused programs, such as rotorcraft or subsonic transport programs, for example.

Results

More with Focused Programs	45%
Less with Focused Programs	16%
About Right	35%
Don't Know	4%

1998 Question 20: The ASTT Program effectively balances fundamental (R & T base) research with its focused-program research. (Agree/Disagree on a 10 to 1 scale)

Results

Agree (8-10)	29%
Partially Agree (5-7)	42%
Disagree (1-4)	29%

1998 Question 20b: Should NASA pursue more fundamental research or more focused program research, and why?

Results

Fundamental Research	33%
Focused-Program Research	34%
Currently Balanced	20%
No opinion	12%

Appendix E – Survey Approach and Methodology

This appendix presents an overview of the survey approach and methods employed in conducting the survey.

- Develop survey program plan to include survey methodology, population selection, budget and schedule.
- Coordinate with NASA OASTT to identify survey requirements.
- Review previous surveys, identify areas where survey questionnaire needs to be updated. Include section of questionnaire on OASTT's Pillars and Goals.
- Areas of emphasis include customer (interviewee) buy-in to the survey process and assessment of NASA's responsiveness to their customer base.
- Present survey methodology and draft questionnaire to NASA management for their concurrence.
- Select professional polling organization to review and critique survey methodology (review questionnaire, review survey population, and provide introductory interviewee training).
- Develop customer lists in various NASA customer categories including direct and indirect customers, benchmark customers, large businesses, small businesses, government, universities, associations, publications, and Aeronautics Advisory Committee Members.
- Target 100 Executives for interviews; target 100 Mid-Level Managers for interviews, but constrain by budget and schedule considerations.
- Establish interview schedule for key geographical areas of the country.
- Set up preliminary interviews in local area and involve polling organization for observation of the interview process.
- Conduct face-to-face interviews.
- Conduct phone interviews to cover those interviewees missed in the face-to-face interviews.

- Set up a database system to store and retrieve all survey data.
- Enter qualitative and quantitative data into a Microsoft Access database.
- Develop preliminary graphics and tables from database to summarize the survey data.
- Upon completion of all interviews, develop graphics and table from database for inclusion in the final reports.
- Develop the final report and presentation for NASA review and approval.
- Present final results to NASA officials and management.